DPS-DR-10

Aesthetic Assessment and Mitigation Recommendations for the Proposed VELCO Northwest Reliability Project (NRP) PROPOSED REROUTE ALTERNATIVES

DOCKET 6860
VELCO NW Reliability Project

Submitted to:
State of Vermont
Department of Public Service
Montpelier, VT

Prepared by:
LandWorks
Middlebury, VT

May 20, 2004

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Introduction to the Report

This aesthetic assessment and report is submitted to the Vermont Department of Public Service in response to its request for assistance in evaluating the aesthetic impacts associated with the Reroute Alternative to the Public Service Board Docket 6860, the proposed Petition of the Vermont Electric Power Company, Inc. (VELCO) for a Certificate of Public Good (CPG).

The Reroute Alternative consists of changes to the original proposed route associated with the Northwest Reliability Project (NRP). The changes were proposed by VELCO in a filing on February 6, 2004.

This report is organized as follows. The report begins with this introduction, followed by the second section, which details mitigation recommendations for the areas of highest aesthetic sensitivity. These are areas of the reroute alternatives which are determined by the Quechee test as "undue, adverse" unless the specific mitigation recommendations detailed in Section II are adopted. The third section is a narrative explaining the impact of each of the Reroute Alternatives as compared to the Original Proposed Route. A recommendation is given as to whether the Alternative Reroute or the Original Route is preferred in each case. The fourth section provides the bulk of the report and includes detailed photographs and location maps for each of the reroute alternatives.

The changes proposed on February 6, 2004 can be categorized into six major segments. Section IV addresses each of the six reroute alternatives proposed by VELCO as follows:

Section IV begins with the New Haven – Route 17 Road Crossing Alternative. This segment changes the tower design proposal at the Route 17 crossing from a single pole to an "H-Frame." This change aims to match the proposed structure to the existing line in that area.

The second part of Section IV details the "Alternative Railroad Reroute." This alternate reroute segment diverts the line away from the City of Vergennes by following the railroad corridor through the towns of New Haven and Ferrisburgh. The reroute is approximately 3.5 miles long. This alternative includes building a new Vergennes Substation along Route 22A. This new route takes advantage of the existing railroad corridor. There is currently no transmission line in the railroad corridor.

The third part of Section IV addresses an alternate reroute that is an approximately 1-mile long stretch intended to mitigate the Little Chicago Road crossing. This new route diverts the line to the west of the railroad tracks in

order to avoid crossing Little Chicago Road at that point.

The fourth part of Section IV addresses an alternate reroute includes a new substation in Charlotte, and a half-mile reroute around the Ferry Road crossing. This alternate reroute is intended to avoid crossing directly in front of the Waldorf School. The reroute draws the line away from the school and out into the existing meadow, where the route parallels the existing Greenwood America Property.

The fifth part of Section IV addresses an alternate reroute in Shelburne to mitigate the effects of the line in close proximity to a number of homes and condominiums. The line is drawn away from homes along Heritage and Fletcher Lanes, and instead runs through an open wetlands area. The new reroute crosses in proximity to The Arbors residences. This reroute alternative also includes expanding the Shelburne Substation located on Harbor Road.

The sixth part of Section IV addresses the Queen City Substation, where the design is now proposed to expand out 80' to the north and 50' to the east of the existing structure and into the existing buffer area.

Section V of the report puts forward an alternative route in the area of the Waldorf School that we suggest is superior to both the original and alternative routes in that area proposed by VELCO.

Section VI of this report contains analysis and recommendations on the visual impacts of substation lighting.

New Haven to Queen City Substation 115kV Transmission Line Alternatives: Mitigation Recommendations for Areas of Highest Aesthetic Sensitivity

The Section by Section analysis beginning on page 12 highlights those areas proposed under the reroute alternative that will experience an adverse impact if the NRP is constructed. It may be desirable to mitigate those adverse impacts but the charge of this report is to address those areas which will experience an undue adverse impact on aesthetics if the project is constructed. Thus, this section focuses only on those areas in the Overview of Individual Sections, which in our opinion, if this project is constructed, will result in an undue, adverse impact, due to the fact that 1) it either will offend the sensibilities of the average person or 2) sufficient and generally available mitigation measures which a reasonable person would take have not been proposed by VELCO. In our opinion, other areas of the proposed reroute will not experience an undue adverse impact on aesthetics as a result of the NRP. In addition, the issue of compliance with community standards is addressed in the section entitled Survey of Regional and Town Plan, contained in our original report.

There are some areas along the sections of the corridor of the proposed reroute where placing the lines underground will satisfy the standards of Quechee and eliminate any undue adverse impacts on aesthetics. These options are not included because other mitigation measures described in this report will prevent an undue adverse impact to aesthetics and the original testimony of Department of Public Service experts Mr. Hans Mertens and Mr. George Smith outlines the reasons for not considering the underground option and these include:
1) The cost of undergrounding
2) Reliability issues associated with undergrounding
3) Potential for other environmental impacts if this option were to be considered.

Mitigation measures are proposed only for those locations described in this summary section. In our opinion these measures will satisfy the Quechee standard and prevent an undue adverse impact to aesthetics. VELCO will need to respond to these recommendations with more detailed mitigation measures designed specifically for the areas delineated. Planting plans with plant materials of sufficient size and number, different routings, as well as pole placements and other measures will need to be part of this next step to ensure that an undue adverse impact will not result from this project. Mitigation measures are proposed only for those two areas of the reroute where we believe the Quechee test cannot be satisfied by the current reroute proposals. These are areas of highest aesthetic sensitivity.

Mile 0.0 In New Haven at the Route 17 crossing and environs

This is a highly sensitive area and visible to many travelers with outstanding views to the west and east as the traveler drives along the road. Moving to a side by side placement is not necessarily an improvement insofar as the viewer will not see the benefit of this alteration and, if anything, it will present more of the towers and their mass to the viewer and add more structures to the open space. The matching of poles has much more effect when looking at the line from a perpendicular perspective rather than head on.

This proposal does not satisfy the concerns raised in our initial report (see pages 19 and 20) and our discussion and proposed mitigation measures remain recommended. These measures from our original report will need to be fully considered and implemented as appropriate in order for VELCO to avoid the undue, adverse determination.

The notion of having two side by side H-Frame pole structures versus an H-Frame and single pole structure has been proposed by VELCO for the New Haven Route 17 road crossing. We do not believe this is a net gain because the overall impact on the skyline view is of more structure, more transmission elements in the landscape and viewshed. They are simply more noticeable. Two H-Frames side by side cross a threshold of size and scale which makes them much more evident and visually occupy more space. The lack of symmetry with a single pole and an H-Frame frame side by side is really not any more discordant when one considers that any transmission structure marching across the landscape in and of itself is discordant and a visual impact. Symmetry does not solve this problem, and if anything the single pole / H-Frame pattern side by side is less noticeable and thus less impacting.

Mile 16 to 17 Charlotte in the vicinity of Ferry Road

There are aspects to the reroute proposal which are beneficial and aspects which actually create more of an undue adverse impact than in the previous proposal. Moving the Charlotte Substation is a definite improvement as it takes the substation and its associated elements off of the roadside where it is highly visible and an intrusion on the aesthetic character of the neighborhood. A restoration plan for the current substation site, if it is abandoned, needs to be developed.

The rerouting of the lines, however, brings the corridor more out into the open, and it will be difficult to screen. This is an important road traveled by many visitors to the state as it leads to the ferry; it is also a gateway to the village and the site for the proposed development of Charlotte's "West Village."

The Town of Charlotte has been working for a number of years on plans for the appropriate development of the West Village area (west of Greenbush Road and around Ferry Road). In fact, the Waldorf School is part of that vision as is the proposed residential development to its south, the access to and development of which will be severely impacted by this new proposal. This is an important open space and development area in the community and the proposed corridor will both undermine the aesthetics and constrain the future development potential and value. VELCO has not, in our opinion taken reasonable and sufficient mitigating steps for the corridor location with this new proposal and therefore we find that if this proposal is developed it will result in an undue, adverse impact to aesthetics of the area.

This proposal does not satisfy the concerns raised in our initial report (see pages 25 and 26) and our discussion and mitigation measures proposed remain recommended, along with our additional recommendations.

We instead propose an alternate routing of the corridor as it heads in a northerly direction. This alternate leaves the original proposed corridor at approximately Mile 16.6. The alternate is designed to minimize impacts to adjacent buildings by criss-crossing the railroad corridor three times before rejoining the original proposed route and heading towards the proposed substation location. Section V in this report contains a plan view and photographs of the alternate corridor option.

The area on the east is heavily wooded and could afford some clearing with out substantially affecting aesthetics. The exception to this would be at the residence immediately to the south of Ferry Road and east of the railroad tracks. Careful and selective clearing and replanting would be required here to protect the interests of the property owner here, but we believe it can be accomplished. This proposal would keep the line close to the existing corridor, avoid the route directly in front of the school where the bulk of pedestrian activity occurs, and keep it in the least visible location.

Final detailed plans will need to be provided by VELCO to ensure that the mitigation measures proposed in this supplemental report and in the original report are satisfactorily implemented.

Reroute Alternatives Compared with Original Proposed Route

In addition to applying the Quechee Test to the reroute alternatives and recommending mitigation to avoid an undue adverse impact, we also compare those alternatives with the original proposal, as discussed below.

The New Haven Reroute proposal (matching H-Frames) does not represent an improvement to aesthetic conditions there because the increase in the number of poles and its visibility will make the line more apparent in the view. Matching works once the line runs parallel to the view.

The Vergennes Reroute Proposal is a distinct improvement over the initial proposal insofar as it avoids the Otter Creek Basin and the neighborhoods between the basin and the Comfort Hill area- locations that had the potential for an undue adverse impact from the NRP under Quechee. The Kayhart Crossing substation location and lines feeding it are located in an industrial district and therefore can better accommodate the line. Following the railroad corridor is an improvement. There is an area with the potential for adverse impacts near to the rail line corridor crossing at Monkton Road. Selective routing and screening for those residences can address the adverse impact.

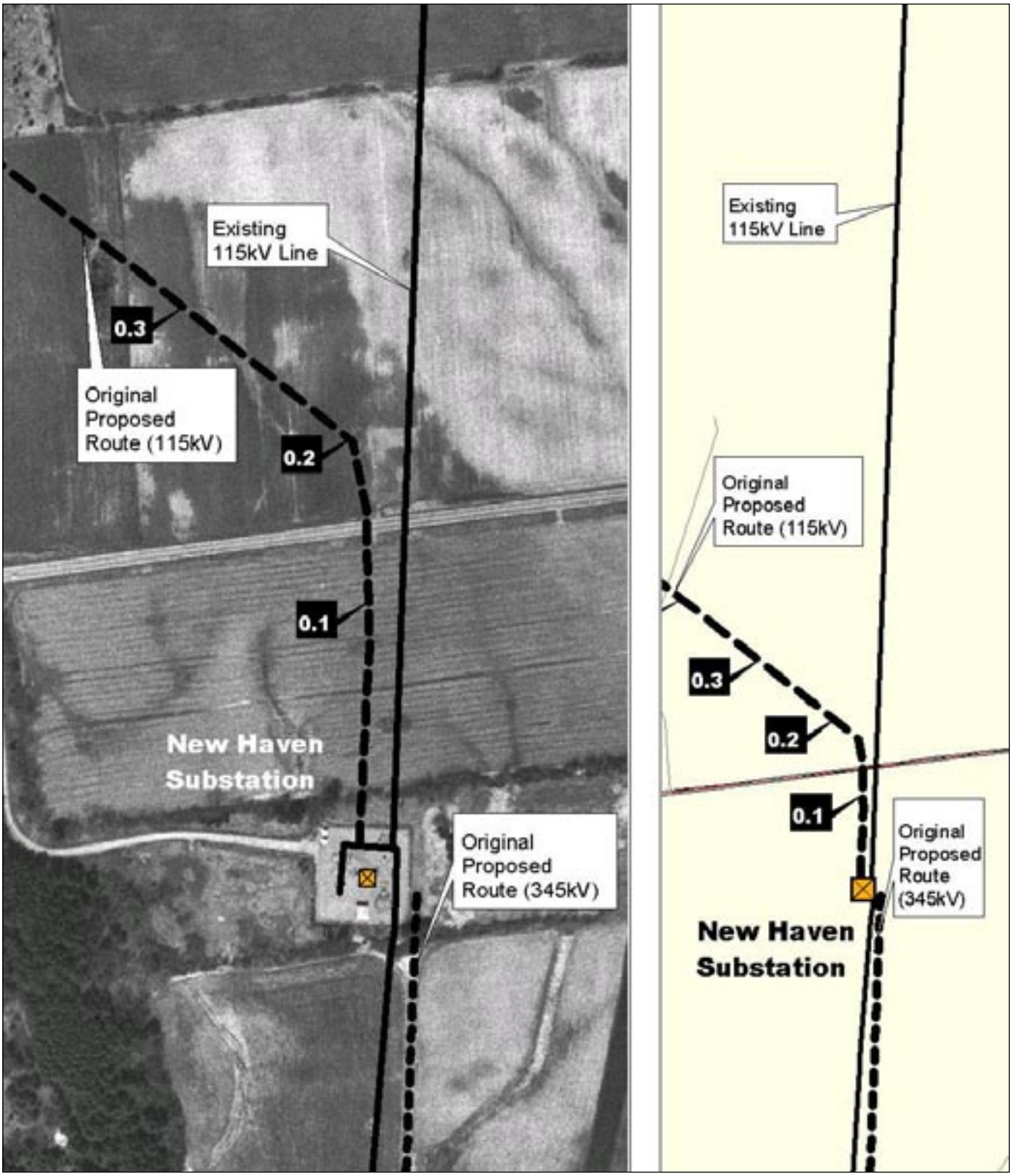
The Little Chicago Road Reroute Proposal also represents an improvement as it has less impact on residences. However, there is some concern with regard to its visual impact to the Little Otter Creek Wildlife Refuge. This area will need to be adequately protected with a managed hedgerow screening.

The proposed Charlotte Reroute does not represent an improvement; rather, it is a worsening of the potential for undue adverse impact because it places the line more into the public view (particular when looking west on Ferry Road toward the Adirondacks) and also compromises the entrance to and development of the West Village area and in particular a parcel owned by Greenwood America. The associated movement of the substation, however, is a visual improvement.

The Shelburne Reroute is important insofar as it takes the line away from direct impacts to the densely settled neighborhood adjacent to Davis Park. It does place poles near to the Arbors residences, but sufficient screening will address adverse impacts to that site.

The Shelburne Substation expansion represents no significant change from the original proposal, although there is less impact to the Haul Road. Vegetative loss should be addressed via mitigation, although the impact is not potentially undue.

Under the VELCO alternative reroute proposal, the Queen City Substation expands in a different direction than previously designed. With sufficient screening and planting to the north and east of the substation, as well as additional screening to enhance the southern buffer to the residences on Maple Street, the substation expansion will not be undue.



Original proposed 115kV line shown as dark dashed line. Numbers on Map correspond to Mile Markers for the Proposed Original Route and Alternative Re-route. Mile Markers correspond to numbered photographs on opposite page; photographs on opposite page correspond to Mile Markers for Reroute Alternatives only unless noted as mile marker for "Original Route." Shaded areas represent Conserved Public & Private Lands.
GIS Data from VCGI & VELCO. Data is only as accurate as the original source. LandWorks does not guarantee accuracy of data.

Mile 0.1
Original
Route

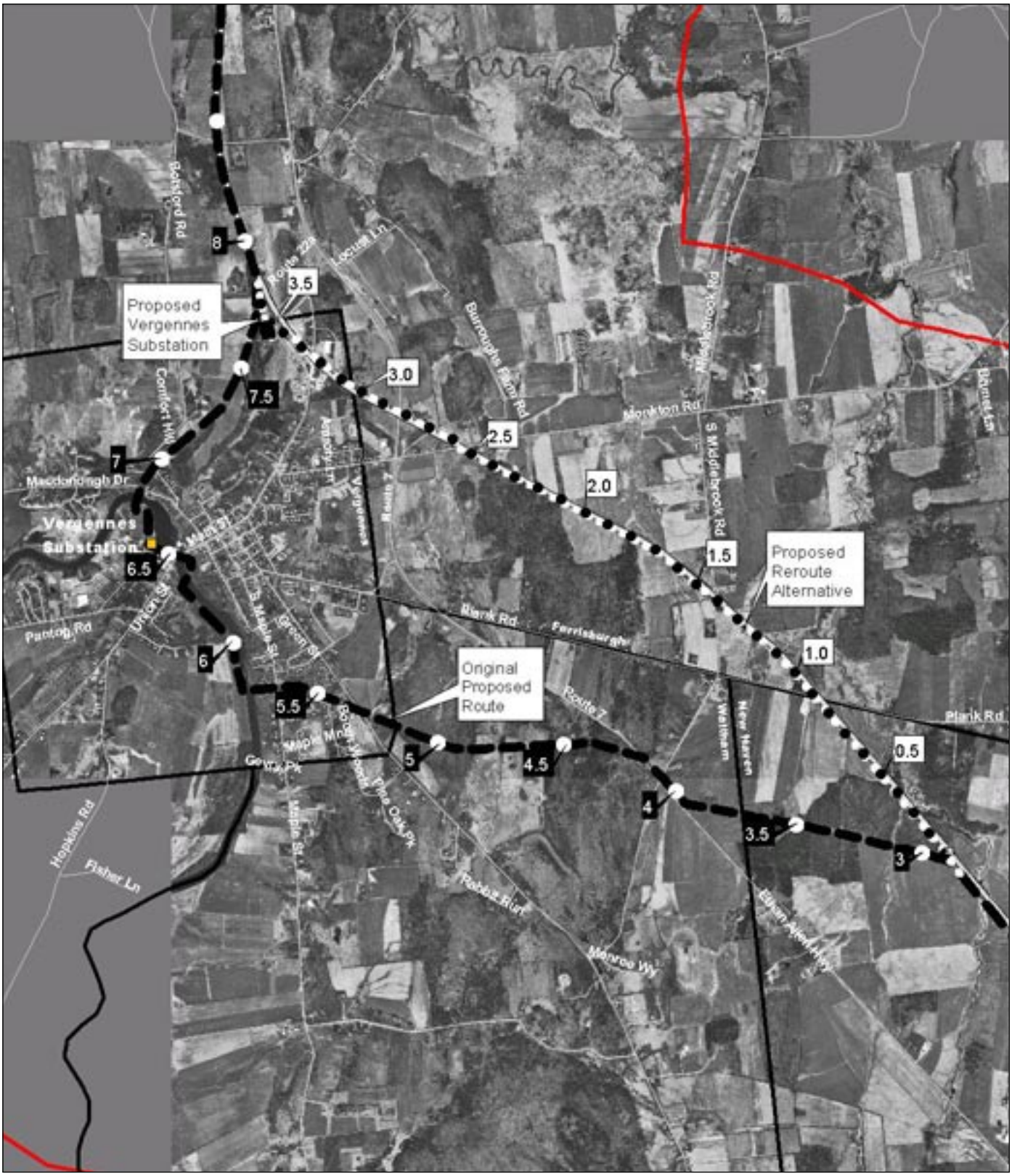
Route 17 (Main Street) road crossing where proposed 115kV H-Frame poles will be added (replacing existing 46kV line). This proposal is a modification from the original NRP which proposed 61' single pole structures in this location. While it may be argued that this proposal for H-Frame structures improves visual quality, the improvement is not sufficient to avoid an undue, adverse determination.

Mile 0.1
Original
Route

View looking south toward the substation. Line on the left hand side in photograph will remain in place. Line on the right will be replaced by 115kV line. Some degree of visual symmetry will occur with placement of additional H-Frame poles rather than additional single-poles, but the profile of two H-Frame side by side will increase the overall visibility of the structures in the landscape and against the horizon.

Mile 0.1
Original
Route

This 46kV angle structure will be replaced by a 115kV angle structure because it is located at a turning point in the line.



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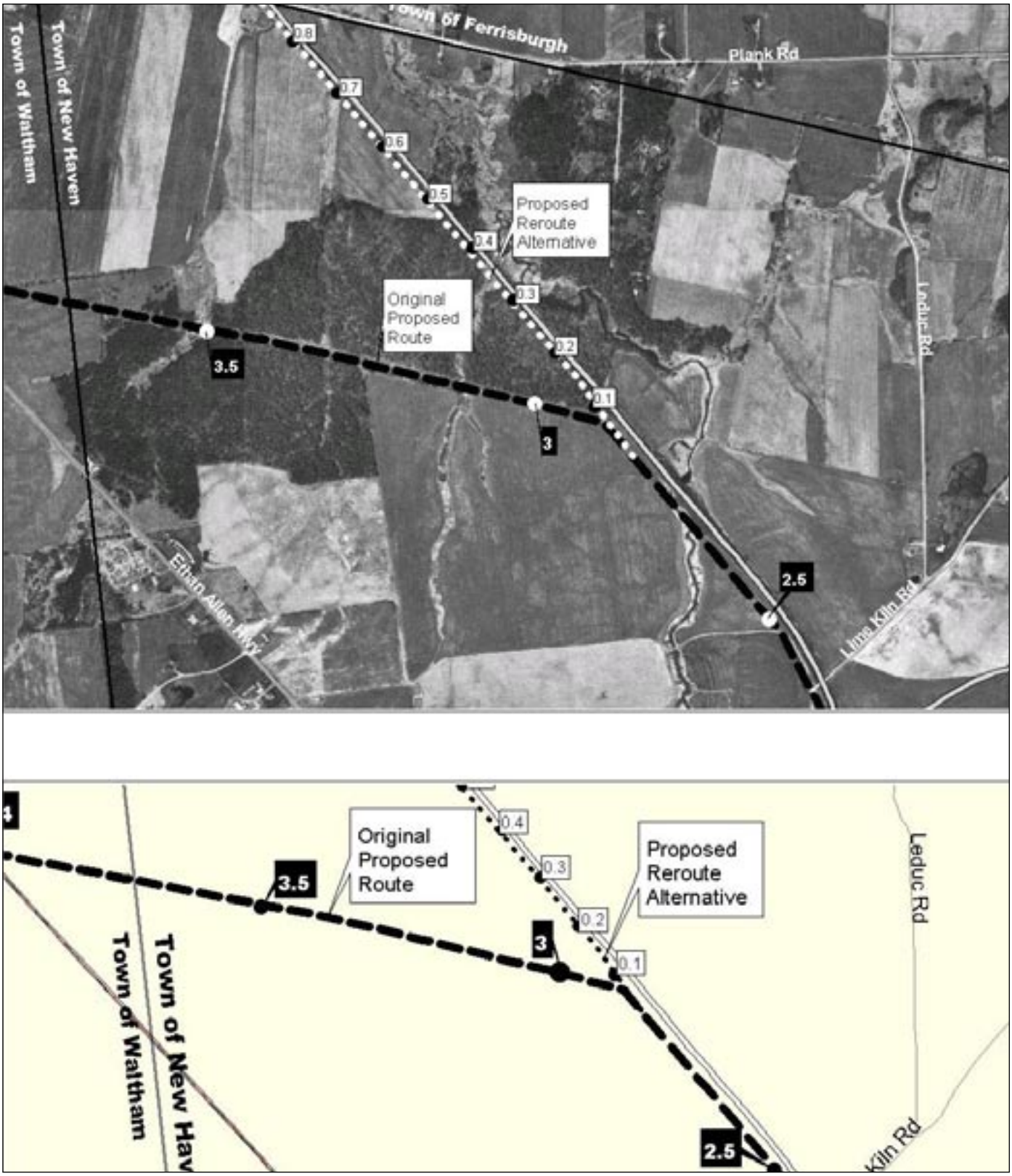
On the opposite page is an overview map of the Vergennes Proposed Railroad Re-route and Substation. This map shows the relation between the original VELCO proposal and the alternative VELCO proposal. The following pages offer more detailed maps.



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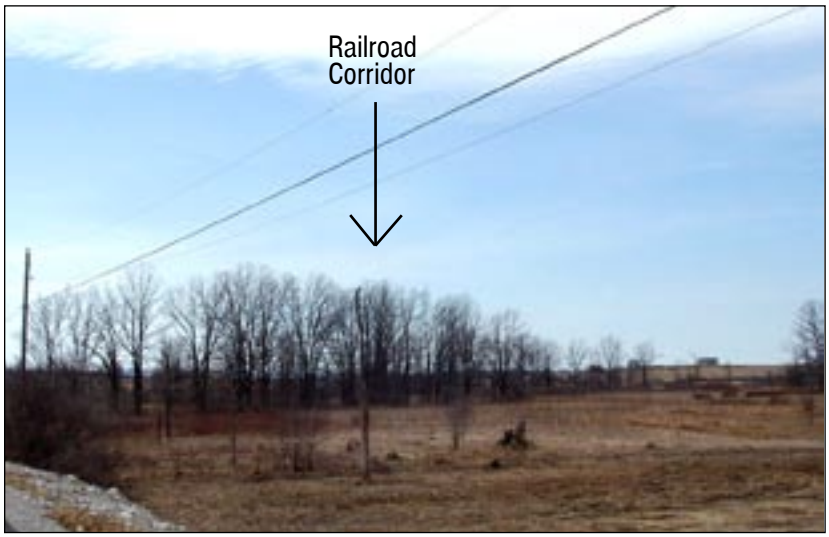
Mile 2.5
Original
Route

View from Lime Kiln Road, looking west at rail-crossing. Due to the existing treeline and the fact that this area is not highly scenic or densely settled, aesthetic impacts will not be highly adverse or undue.

Note that existing utility distribution lines in this and subsequent photographs pertaining to the Vergennes Reroute are not within or parallel to the existing railroad corridor.

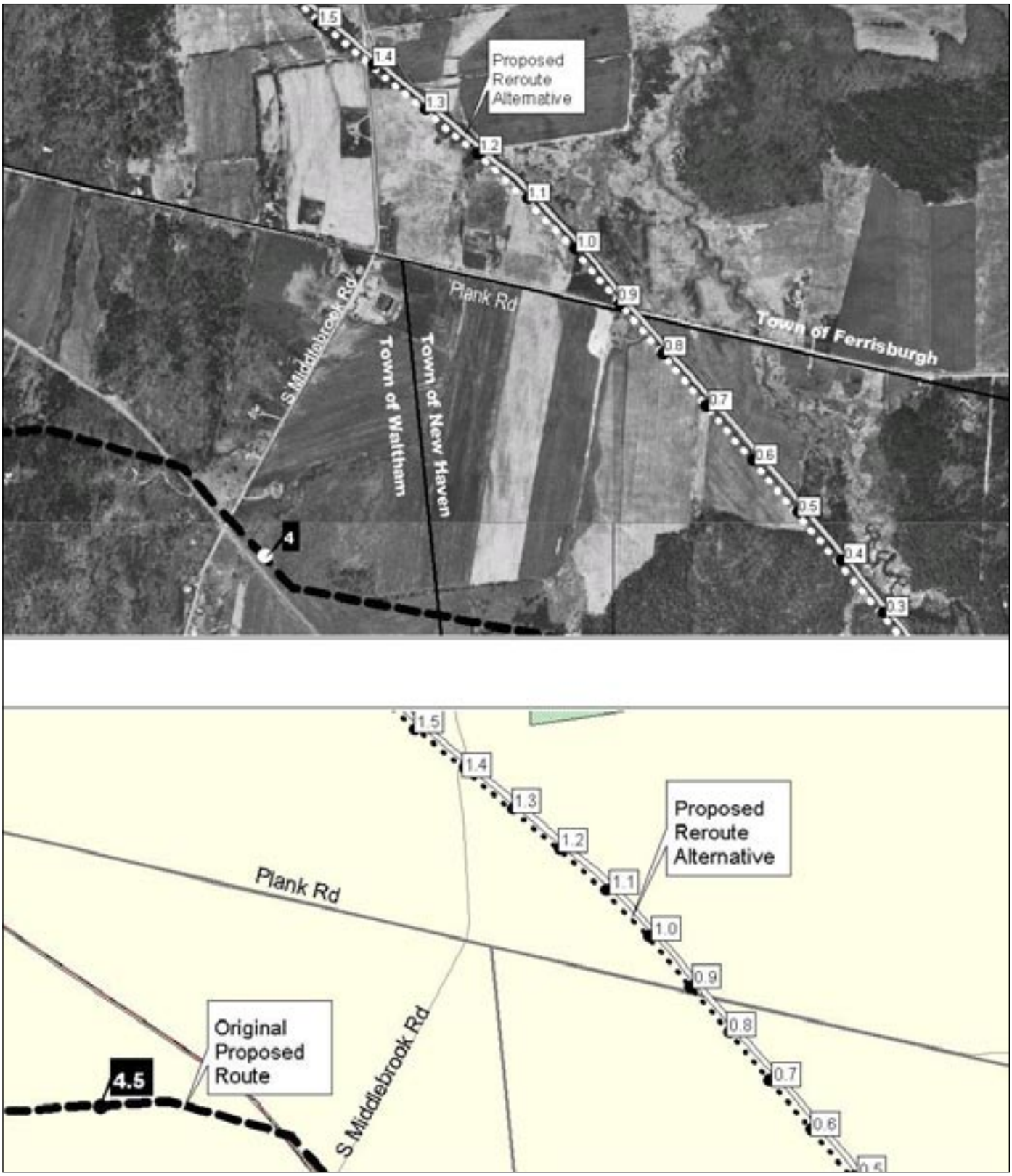


Mile 2.5
Original
Route

Treeline buffer along rail bed heading north. Note that some clearing will occur with new line along this corridor, and this clearing should be kept to a minimum.

Mile 2.5
Original
Route

View of rail bed from Plank Road.



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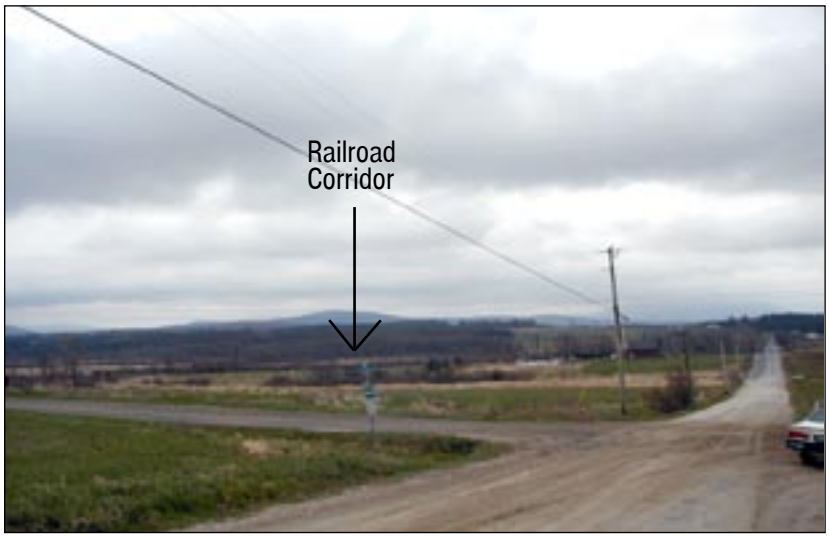
Mile 0.8

View from Plank Road of rail bed and site of alternative railroad reroute. Proposed lines to run to the west side of the rail bed (to the right of the rail bed in this southeastern view).

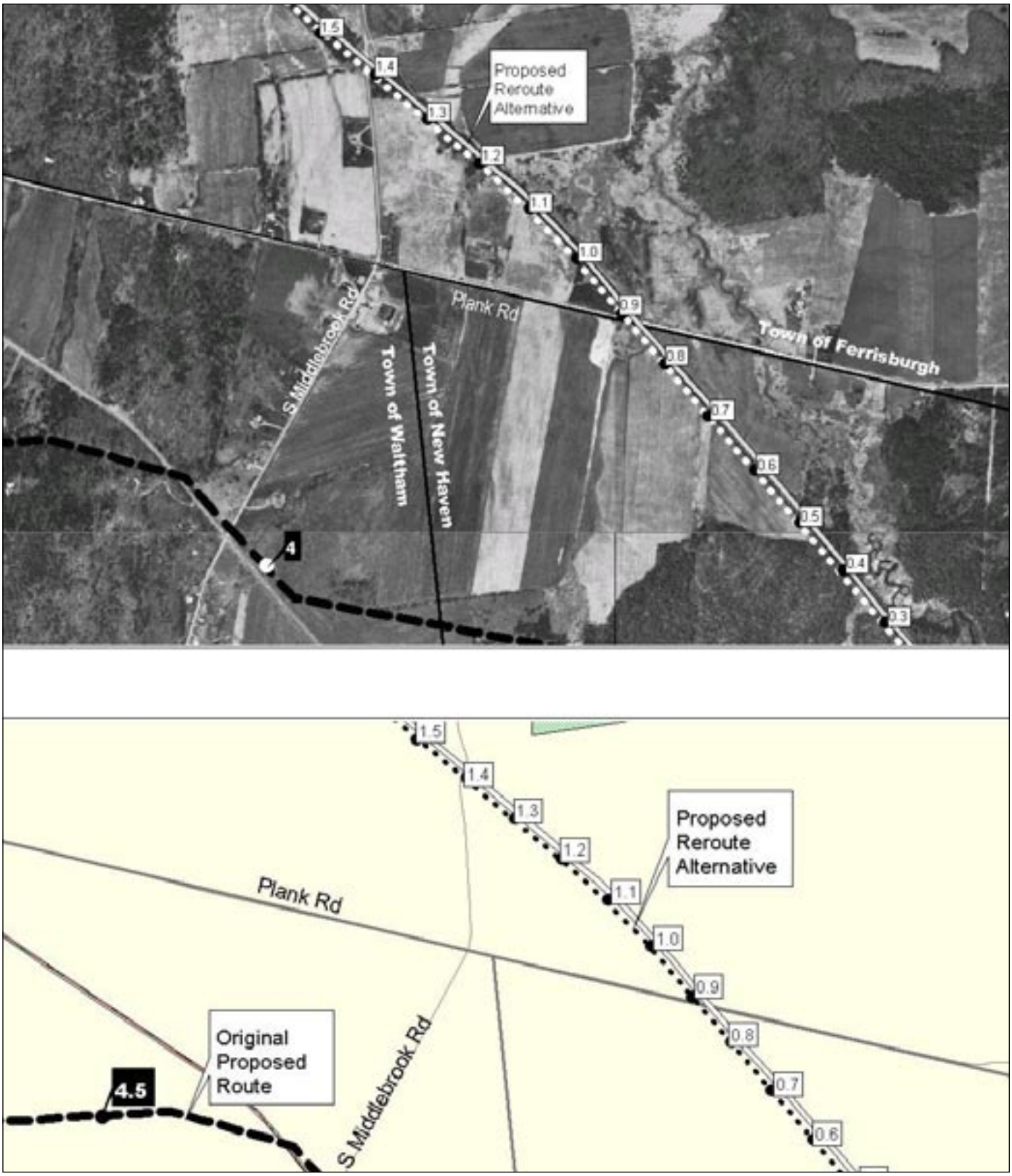


Mile 1.2

View looking east along Plank Road of Middlebrook road intersection and the railroad route in the distance. From this view the poles' visibility should be reduced by the background vegetation.

Mile 1.3

View of Middlebrook road looking north at the Plank road intersection. The railroad corridor is to the right of the building in the photograph.



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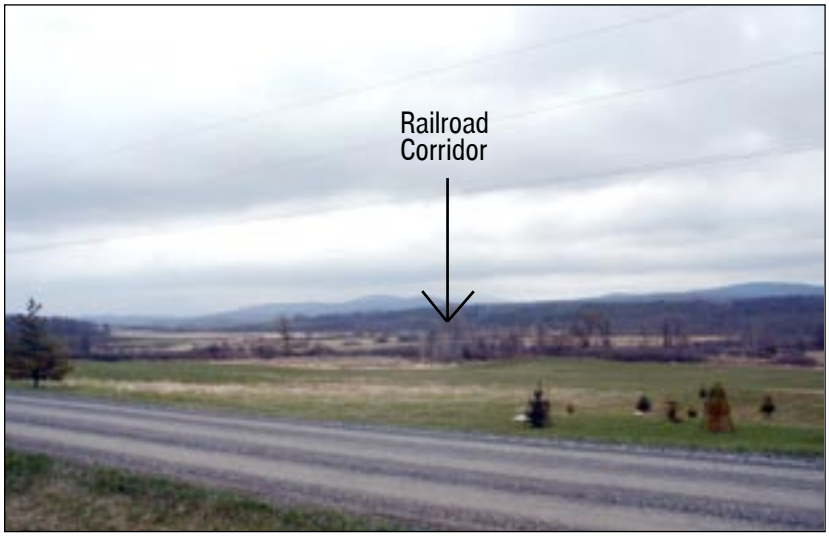
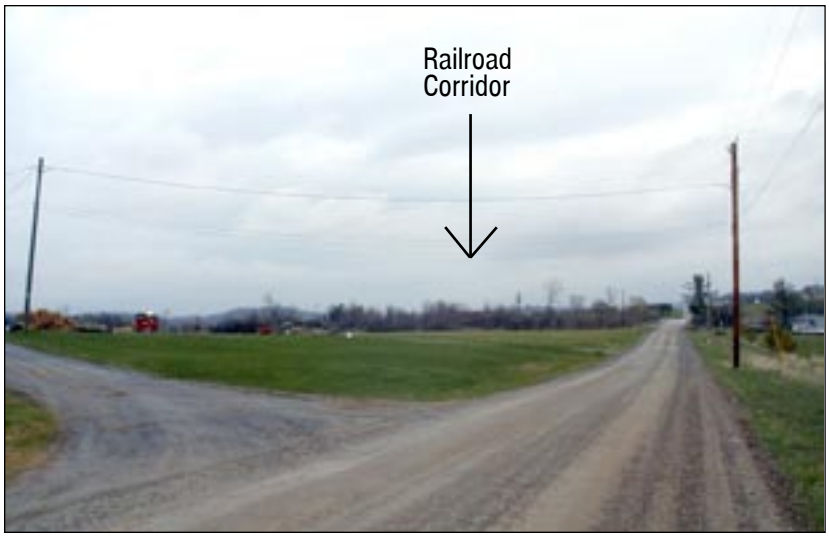


Mile 1.3

View across Middlebrook Road looking northeast at the railroad corridor.

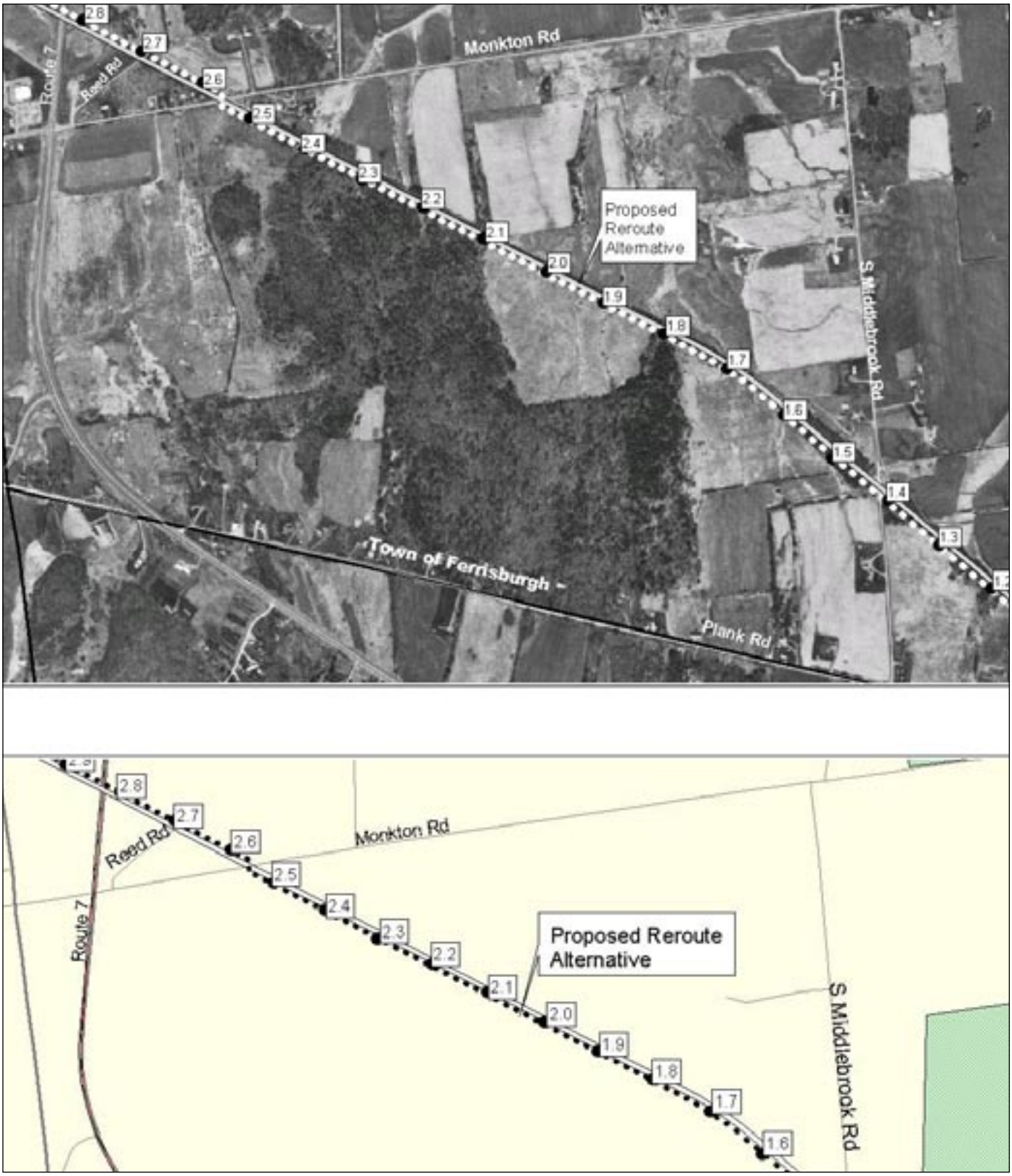
Mile 1.4

View north to railroad crossing on Middlebrook Road. Note the railroad corridor is currently screened by vegetation to the right of building. Clearing will be necessary. Some new screening to reduce impacts to the homes in the area should be considered.



Mile 1.4

View north to railroad crossing on Middlebrook road. Railroad corridor is screened by vegetation as it continues to the northwest on the left side of this photograph. If vegetation is retained it will serve to mitigate the impacts of the poles and lines.



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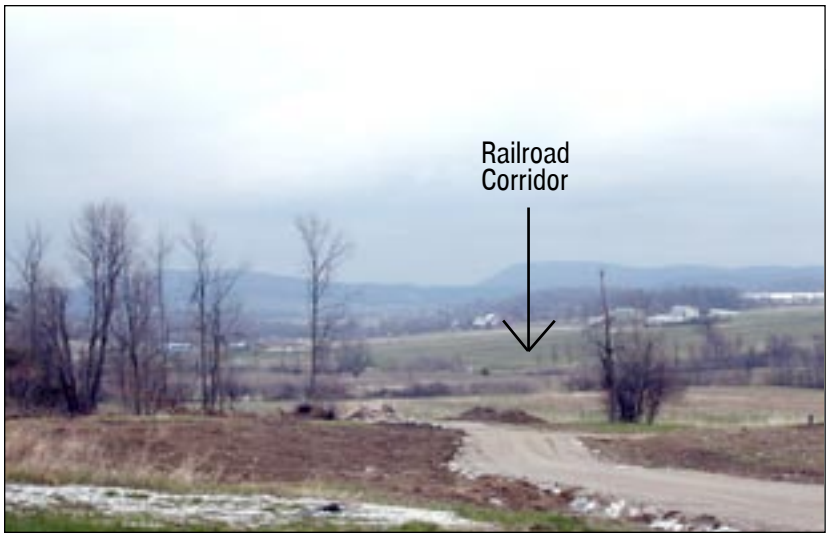
Mile 1.4

View south down the railroad corridor from the Middlebrook Road crossing.

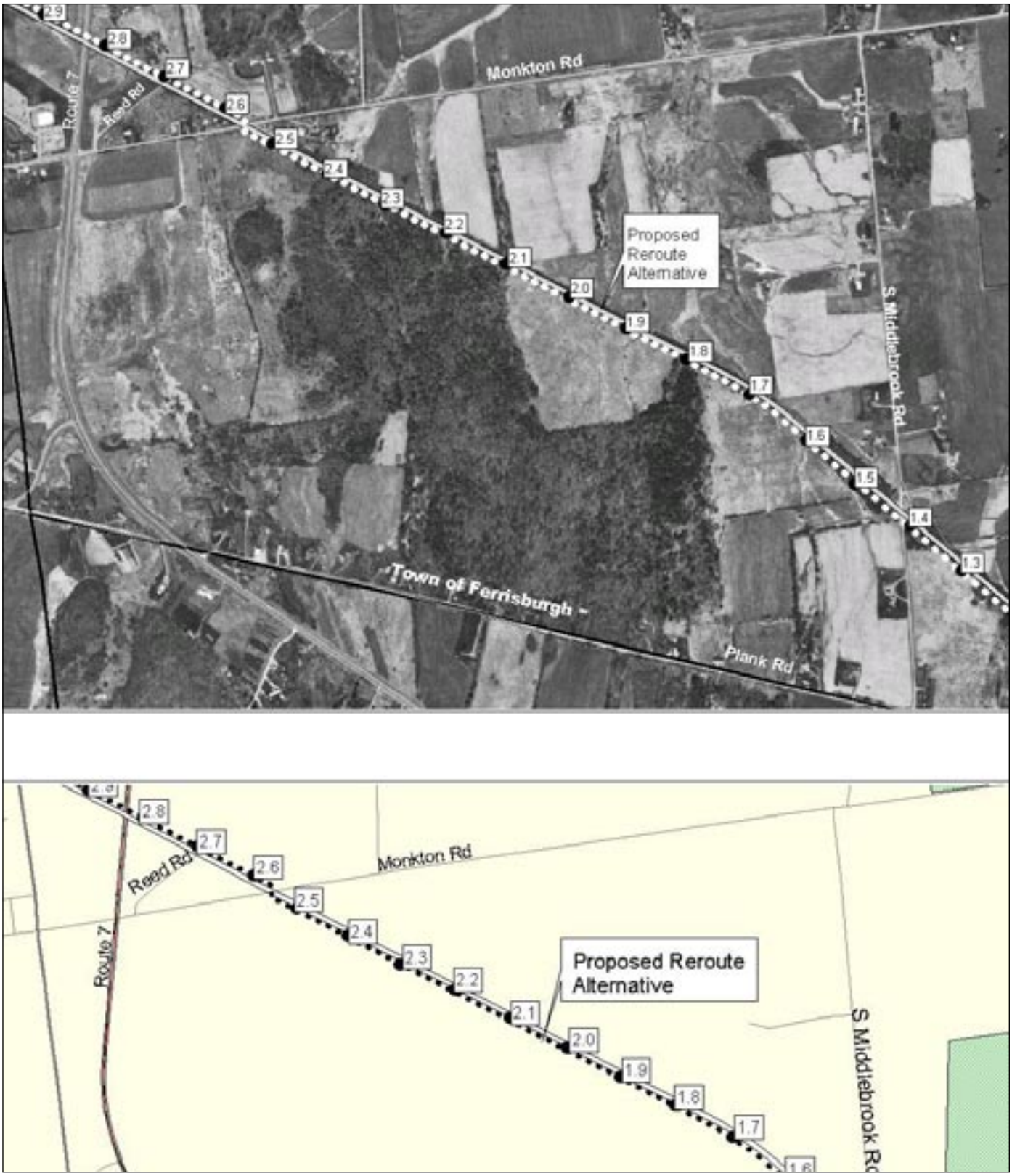
Mile 1.4

View of Middlebrook Road as it runs over the railroad crossing. This view is looking south. Careful pole placement will be desirable here to minimize visual impacts.



Mile 1.6

View from Plank Road of the railroad corridor in the foreground and Monkton Road in the background. Most views off of this road are screened. This location is one of the few with views of the railroad corridor and the proposed Alternate Railroad Reroute.



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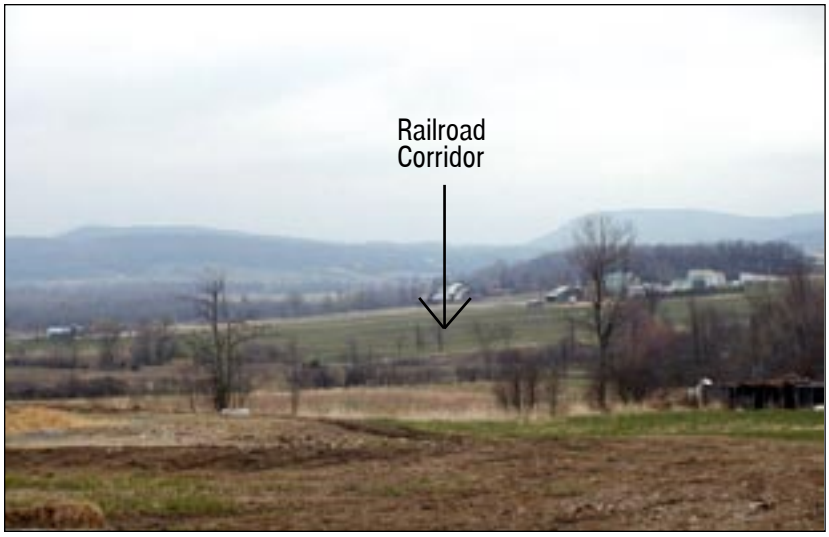


Mile 1.7

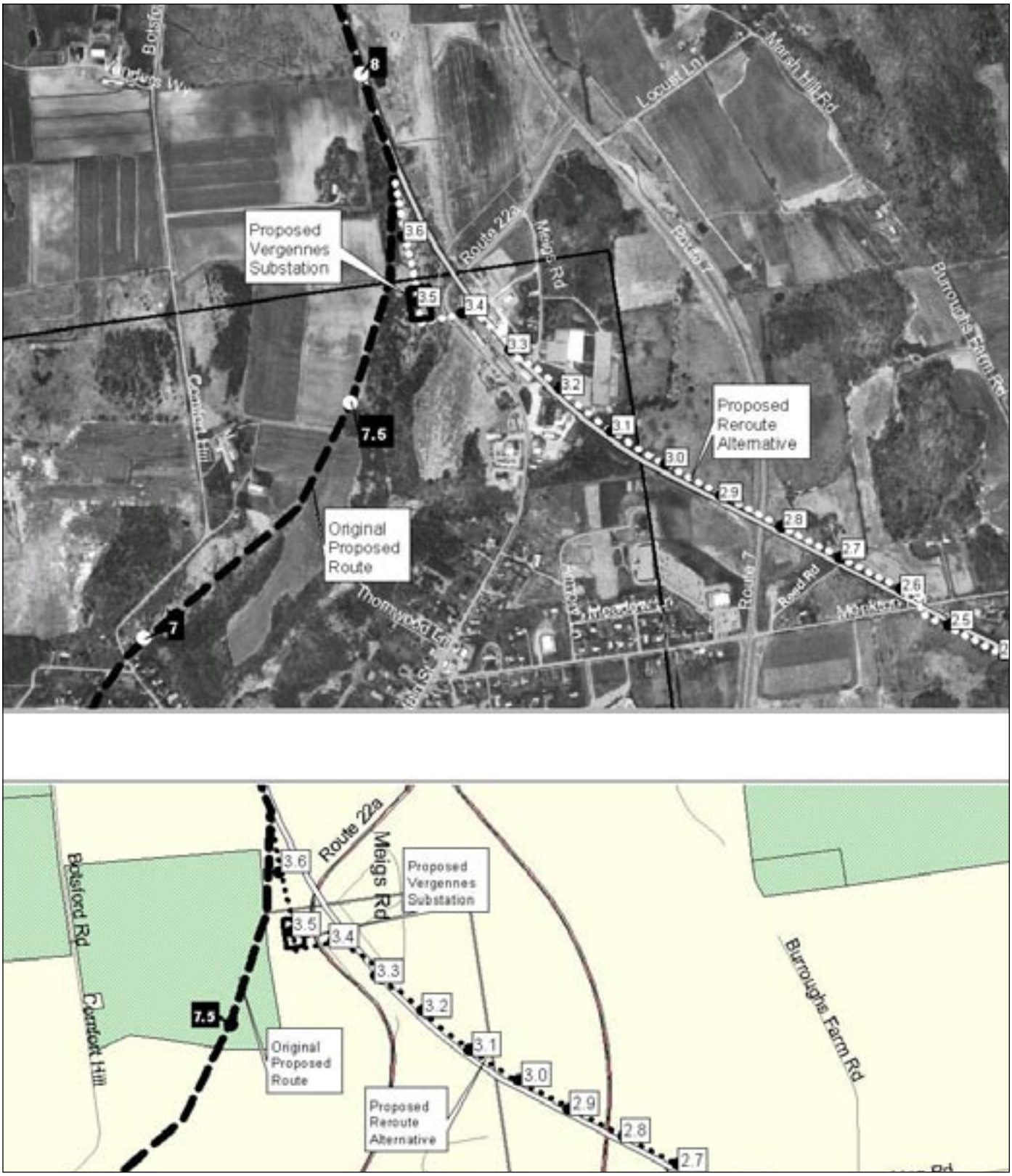
View from Plank Road of the railroad corridor in the foreground and Monkton Road in the background. The poles and lines will be below the background view.

Mile 2.5

View of rail bed just behind roadside building. The railroad follows the existing vegetative screening.

Mile 2.5

View in advance of Monkton Road crossing, looking west. Due to the existing treeline and the fact that this area is not highly scenic or densely settled, aesthetic impacts will not be highly adverse or undue.



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Mile 2.5

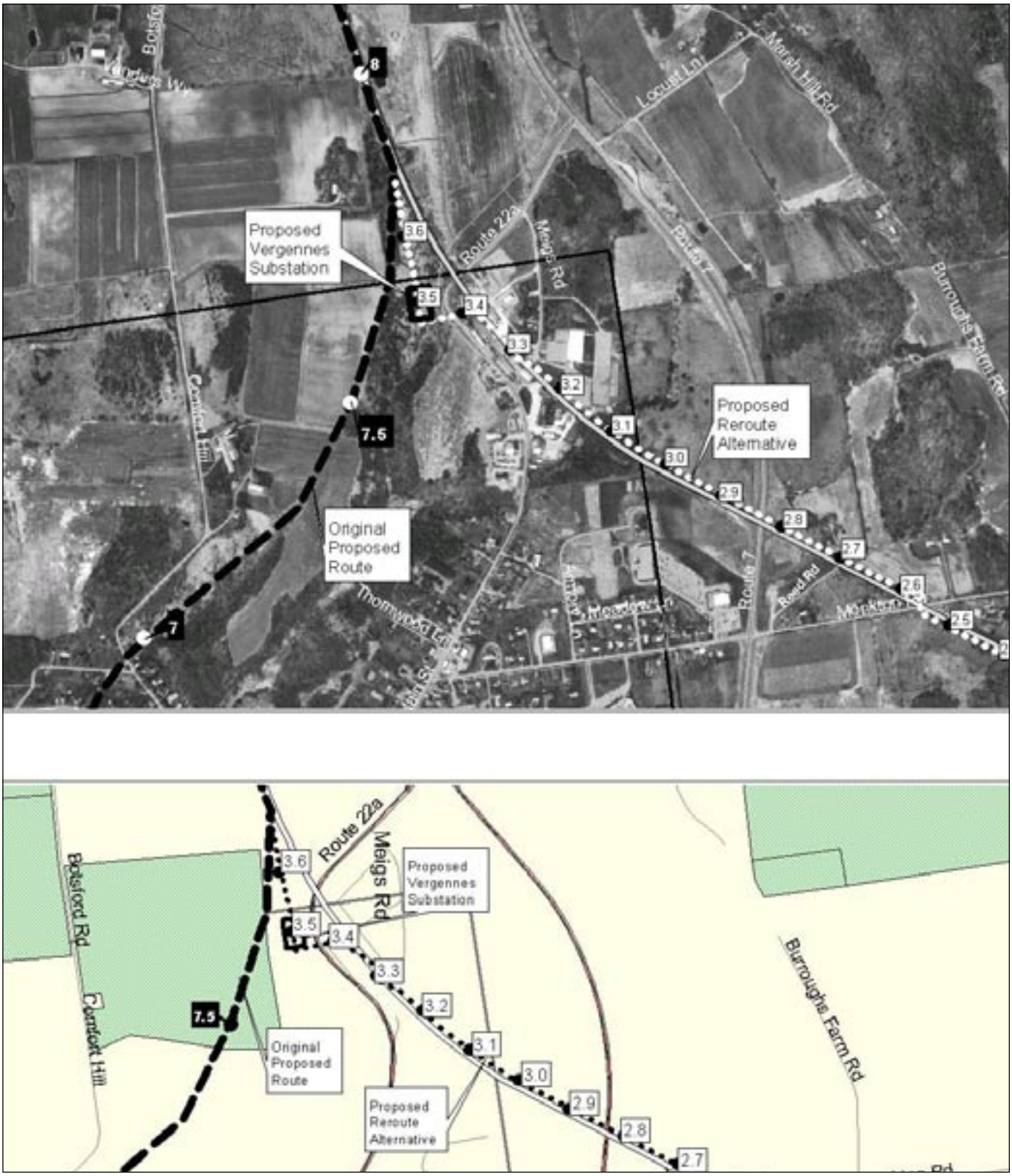
View of Monkton Road crossing from road heading east. Some screening at or adjacent to affected properties may be desirable here to address aesthetic concerns of local landowners. Retaining as much existing vegetation as possible and new screening will reduce the adverse impact.

Mile 2.6

View from Monkton Road crossing as rail bed continues northwest. The route will cross the tracks to avoid proximity to existing building, and the route will continue north on the eastern side (the right side of the tracks in this photograph).

Mile 2.7

View northeast of Reed Road crossing and the driveway to homes close to the corridor. The proposed route runs on the side of the railroad corridor which is closest to these homes and the routing may impact the existing dense vegetative screening from the residences.



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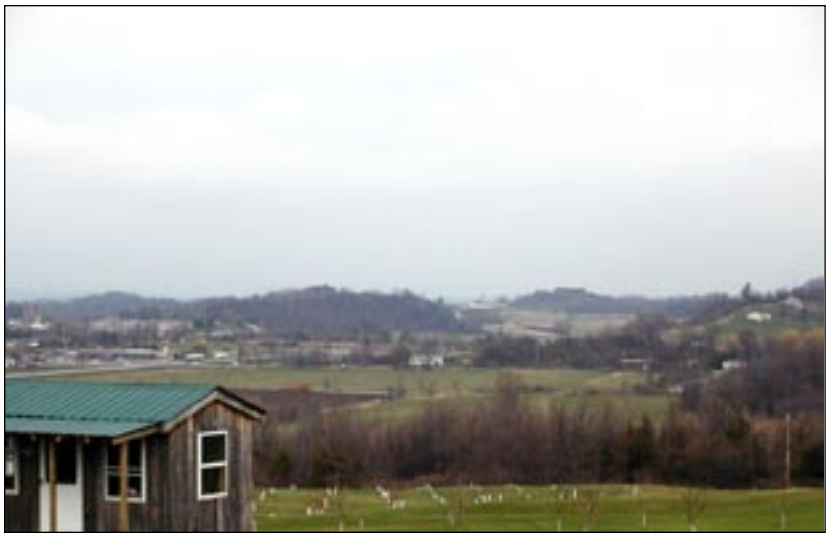
Mile 2.7

View northwest from Reed Road intersection towards the Route 7 intersection. Note the comparison between the more intensive mixed evergreen and deciduous screening on the right side of the corridor (where homes referenced above are located), and the sparse screening on the left side (which is shown again in the photograph below).

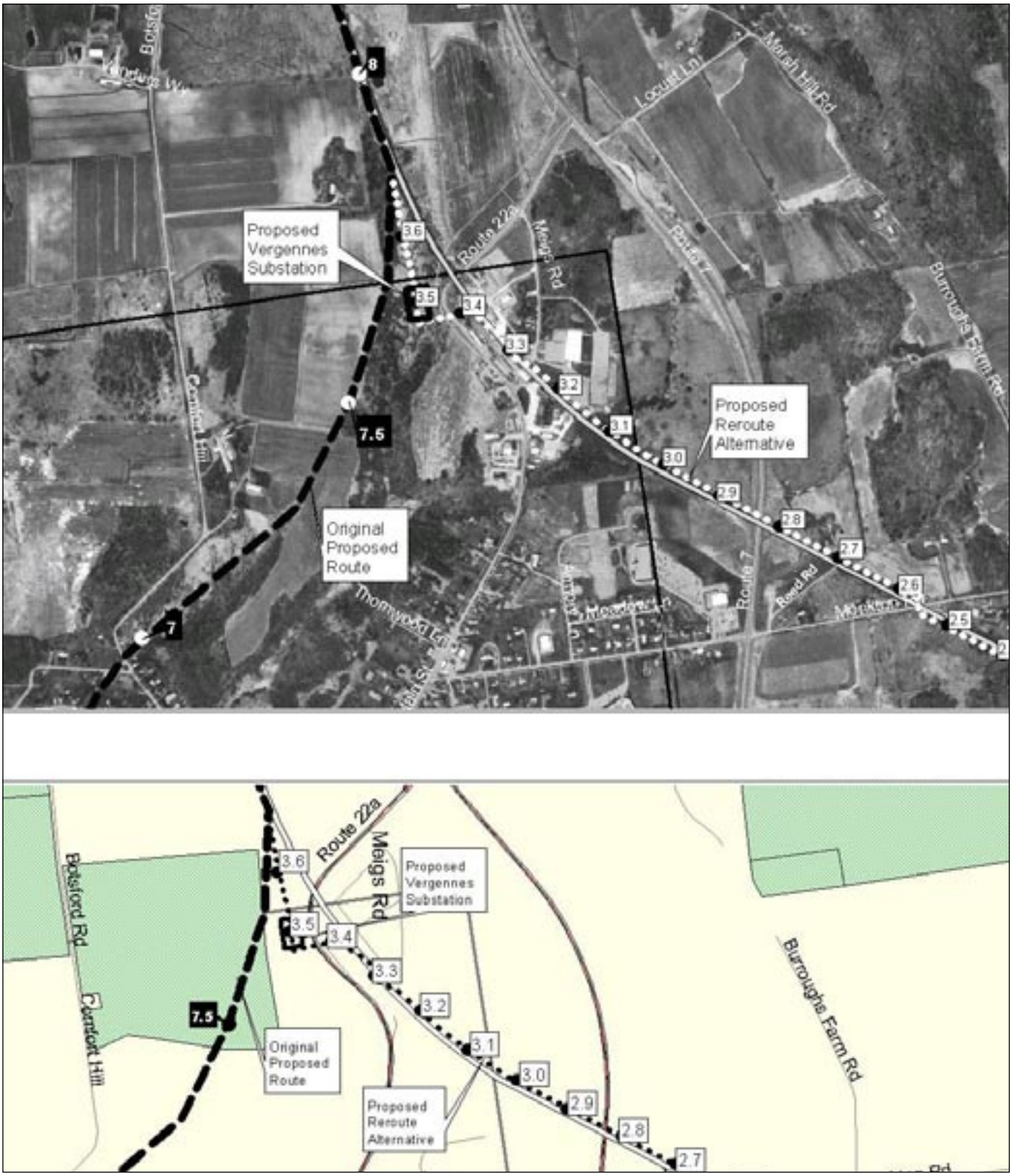
Mile 2.7

View northwest from Reed Road of the sparse vegetative screening referenced above. The railroad corridor is located behind existing screening. To lessen the adverse impact on residences, the line could be routed along this side of the tracks. The route would cross to the south side of the tracks at Mile 2.9, and back to the north side at approx. Mile 26.5 to avoid proximity to Reed Rd. residences.



Mile 2.7 long distance view

View from Plank Road looking towards Vergennes, Route 7 and Monkton Road. The railroad corridor is difficult to see, as it passes north of the Monkton Road / Route 7 intersection.



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Mile 2.8

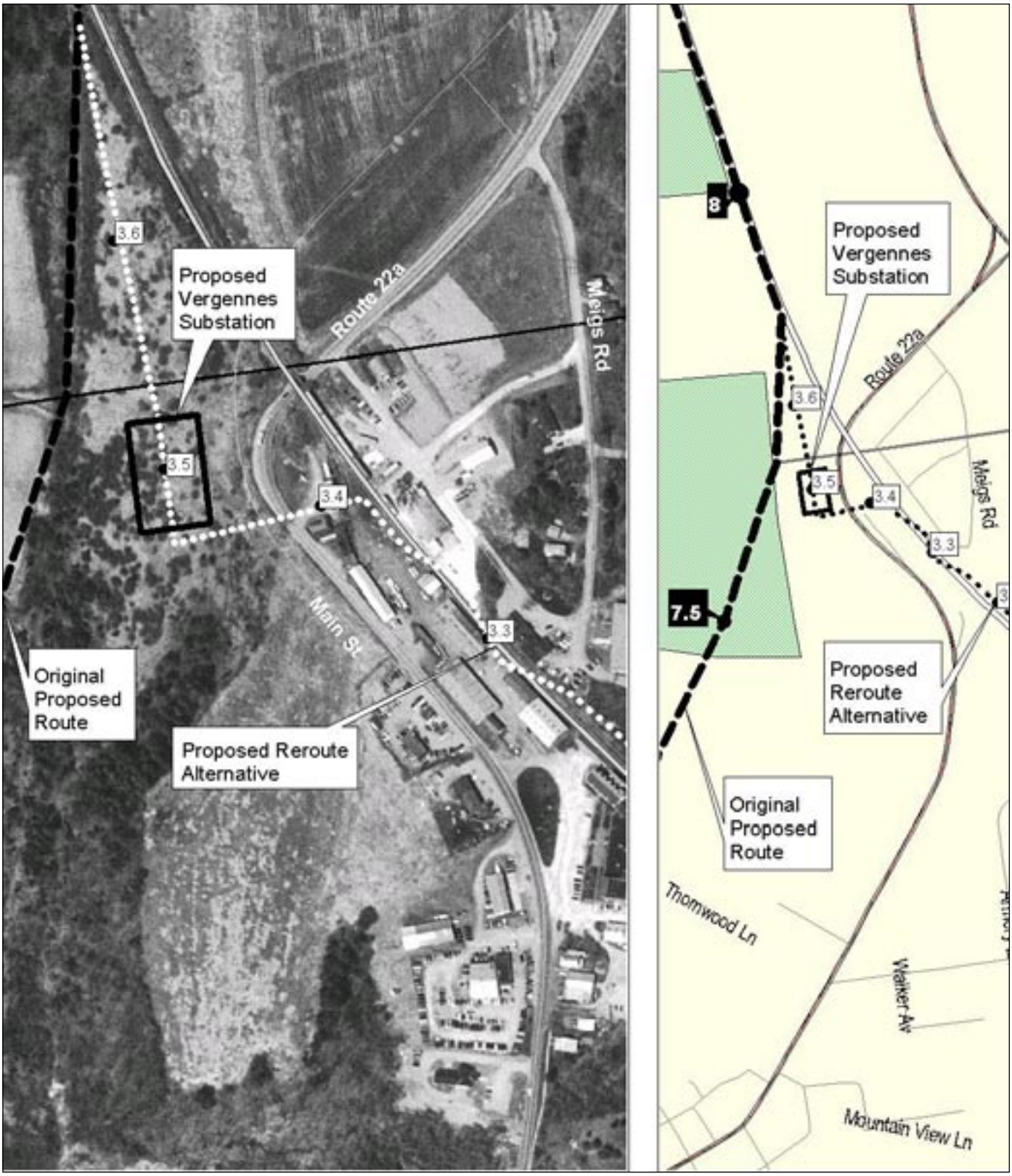
Route 7 crossing, looking north as a train crosses the road.

Mile 2.8

Route 7 crossing - view north. Note that visual clutter already exists in this crossing; this proposal will add significantly to this and thus some roadside tree planting to reduce the impact should be considered.

Mile 2.9

Route 7 crossing - view of tracks as they head northwest towards Vergennes.



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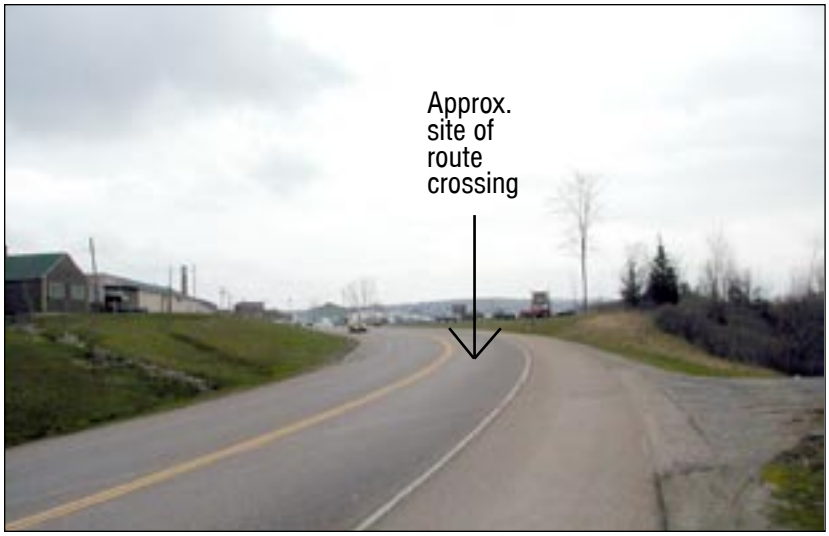
GIS Data from VCGI & VELCO. Data is only as accurate as the original source. LandWorks does not guarantee accuracy of data.

Mile 3.4

View of Kayhart crossing. The lines in the proposed reroute will cross Route 22A in advance of this rail bridge. Proposed substation to be located on land on the left side of this photograph. Recommended measures include screening, long spans, and very careful pole placement to keep poles to the periphery of the driver's view.

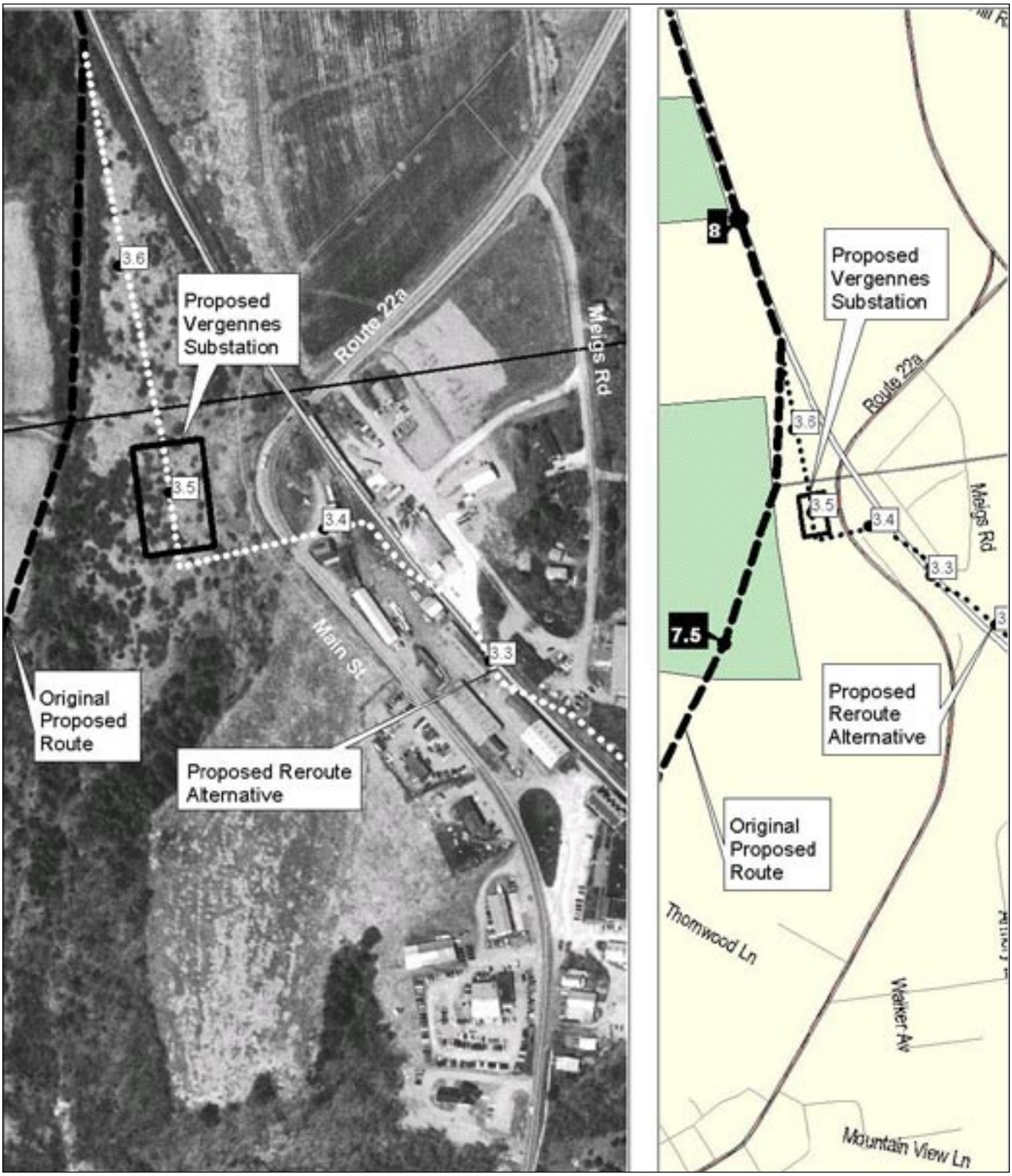


Mile 3.4

Gateway to Vergennes on 22A South. Note that the Gateway sign is located behind the approximate location for new route road crossing. While this is a gateway, it is also an industrial / commercial area of the city. Additional roadside plantings and screening should be considered here.

Mile 3.5

Proposed site of new Vergennes substation. Note railroad in background on the right side of the photograph.



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Mile 3.5

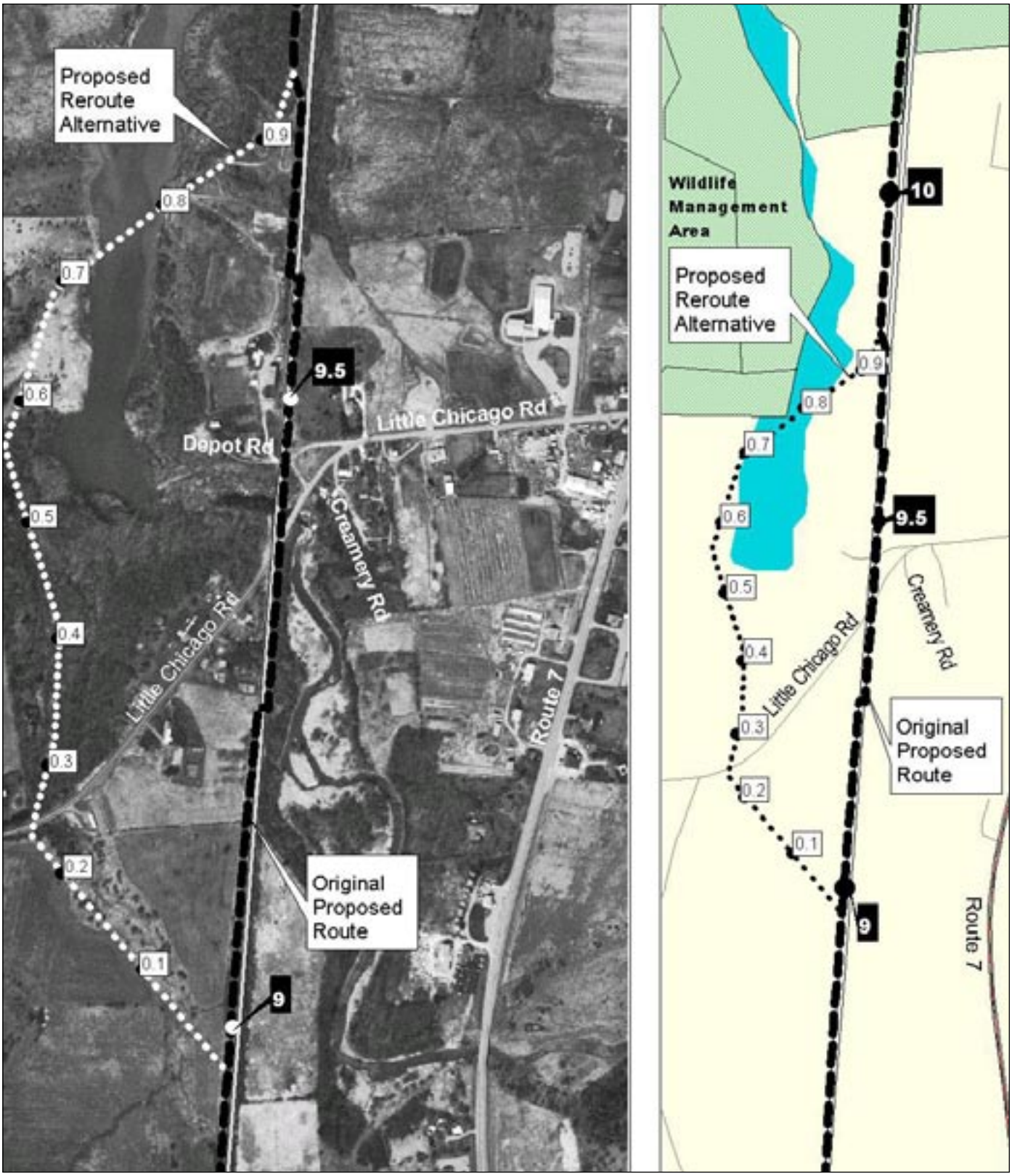
View of approximate location for proposed Vergennes Substation. Screening will be critical here. Recommended measures include screening, long spans, and very careful pole placement to keep poles to the periphery of the driver's view.

Mile 3.5

View of location for proposed Vergennes Substation.

Mile 3.5

View of location for proposed Vergennes Substation.



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Mile 0.0

General vicinity where Alternative Railroad reroute joins 34.5kV line (shown in photograph) for Ferrisburgh reroute. While not shown in these photographs due to difficulty of access, Mile 0.8 of this reroute passes within view of the Little Otter Creek Wildlife Refuge. The line needs to be screened in that location to mitigate adverse impacts.

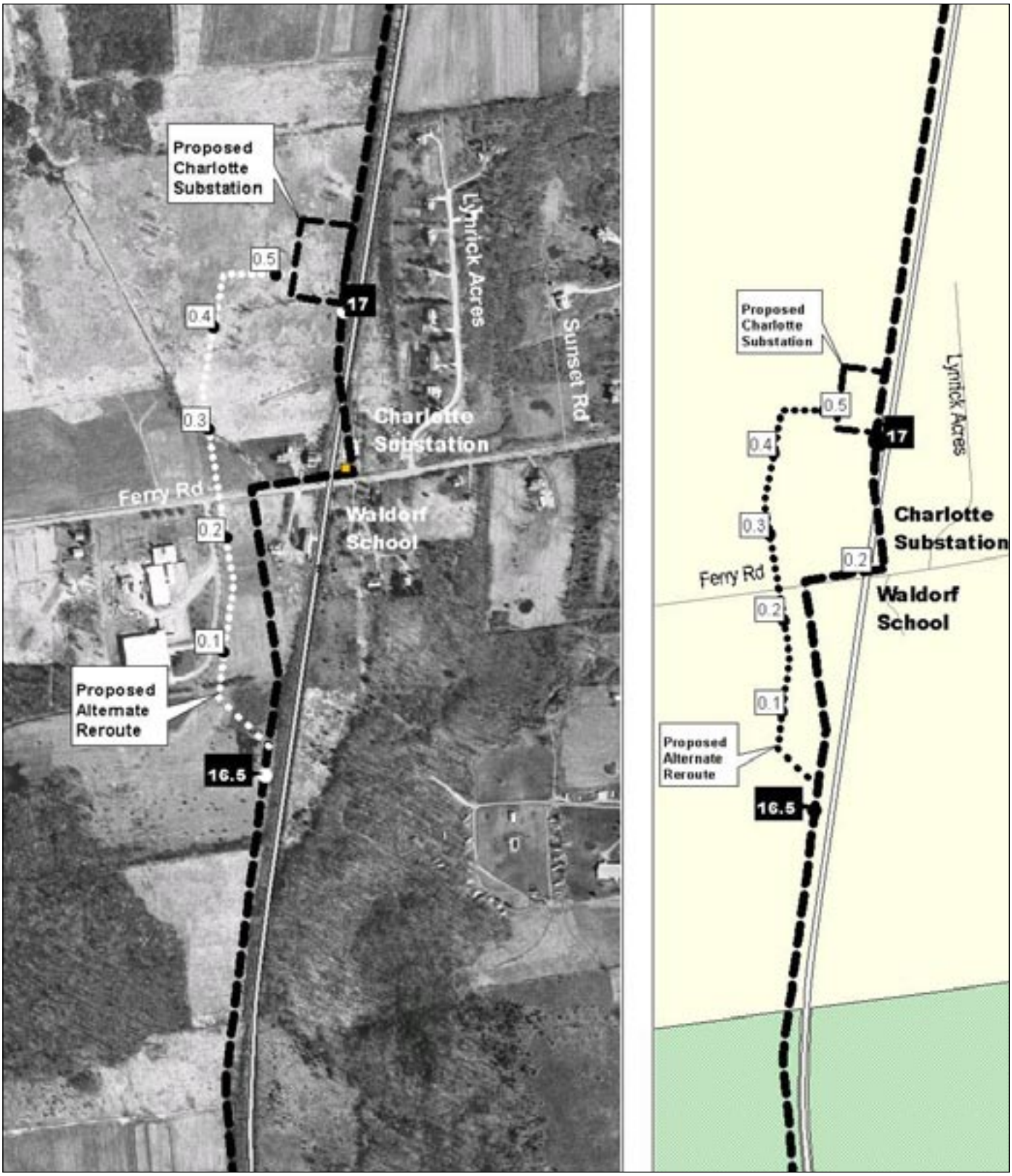
Mile 0.0

General vicinity where Alternative Railroad reroute joins 34.5kV line (shown in photograph) for Ferrisburgh reroute; lines head north.

Mile 0.2

View in Ferrisburgh looking towards proposed Ferrisburgh reroute.

Note that existing utility distribution lines in this photograph are not part of the NRP project.



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Mile 16.75
Original
Route

View of the Waldorf school and the railroad corridor from the western side.

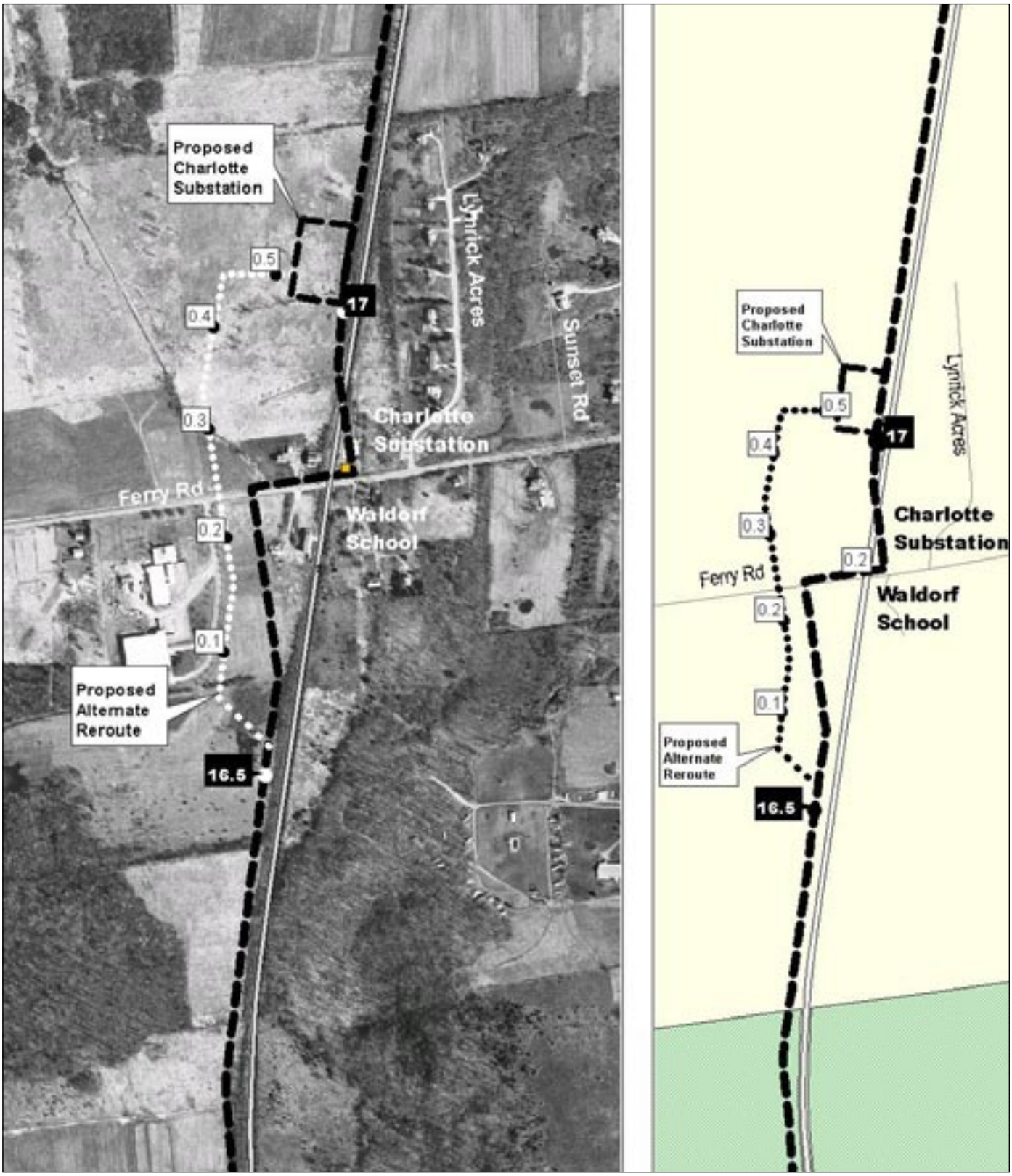
Note that existing utility distribution lines in this photograph are not part of the NRP project.

Mile 16.75
Original
Route

View of the Waldorf school. The existing 34.5kV transmission line is in view. This line will be removed.

Mile 16.75
Original
Route

View looking east, of the Ferry Road crossing as a train passes by.



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Mile 16.75
Original
Route

View looking east of the railroad crossing as a train approaches. Existing utility poles in picture include the 34.5kV line to be removed.

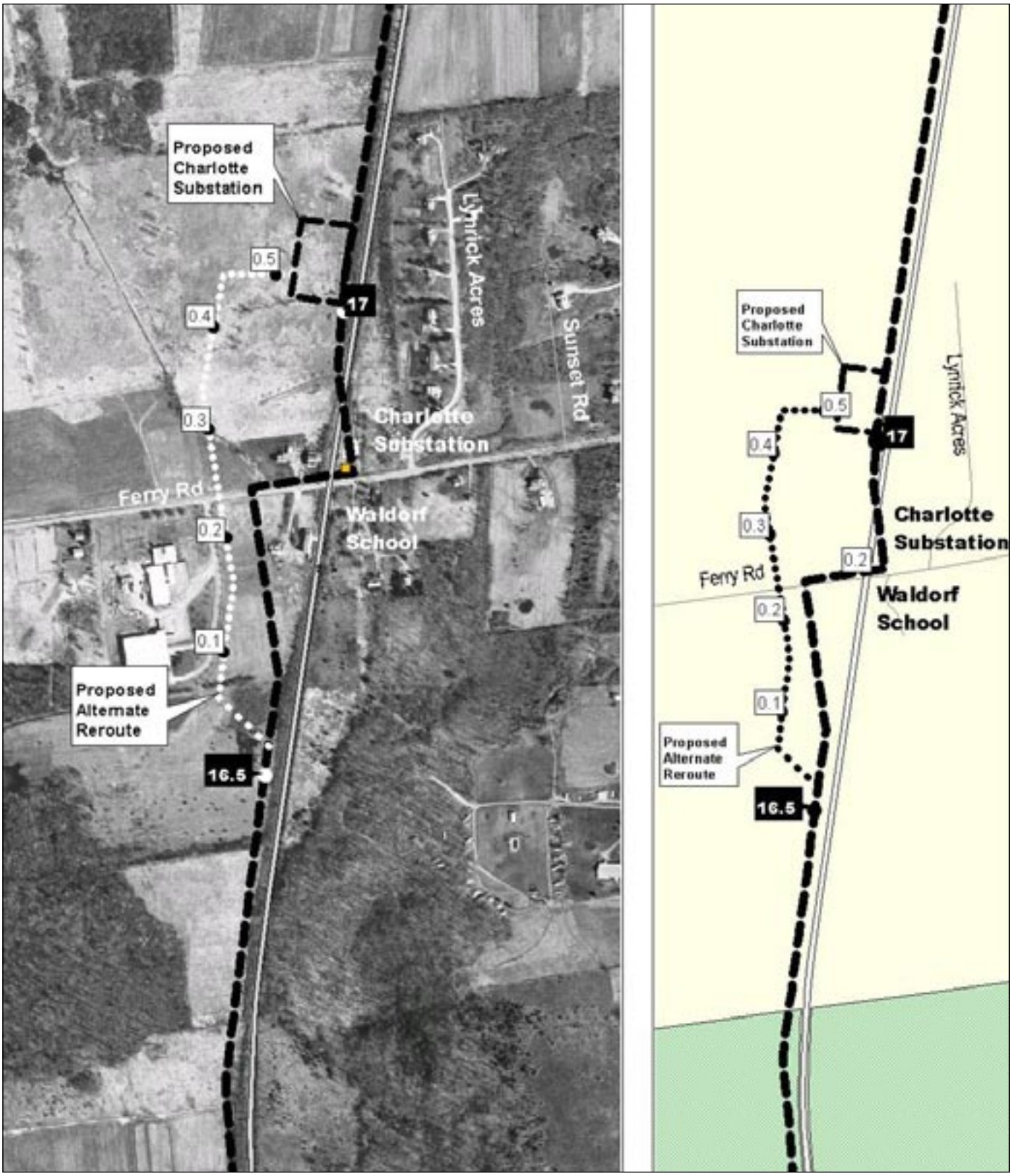
Mile 0.2

View from Ferry Road looking south at proposed location for Charlotte reroute. The lines will be to the left of the fence in this view, and will unduly impact the open meadow and the proposed residential development beyond because: 1) the line will be linear and will be more out in the middle of this visually and aesthetically important open meadow, and 2) will create a new visual impact undermining the access to and arrival at a proposed new west village residential development.

Mile 0.2

VELCO alternative reroute designed to avoid Waldorf school in view. Keeping the line adjacent to the tracks and to the east of the school is recommended.

Note that existing utility distribution lines in this photograph are not part of the NRP project.



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Mile 0.3

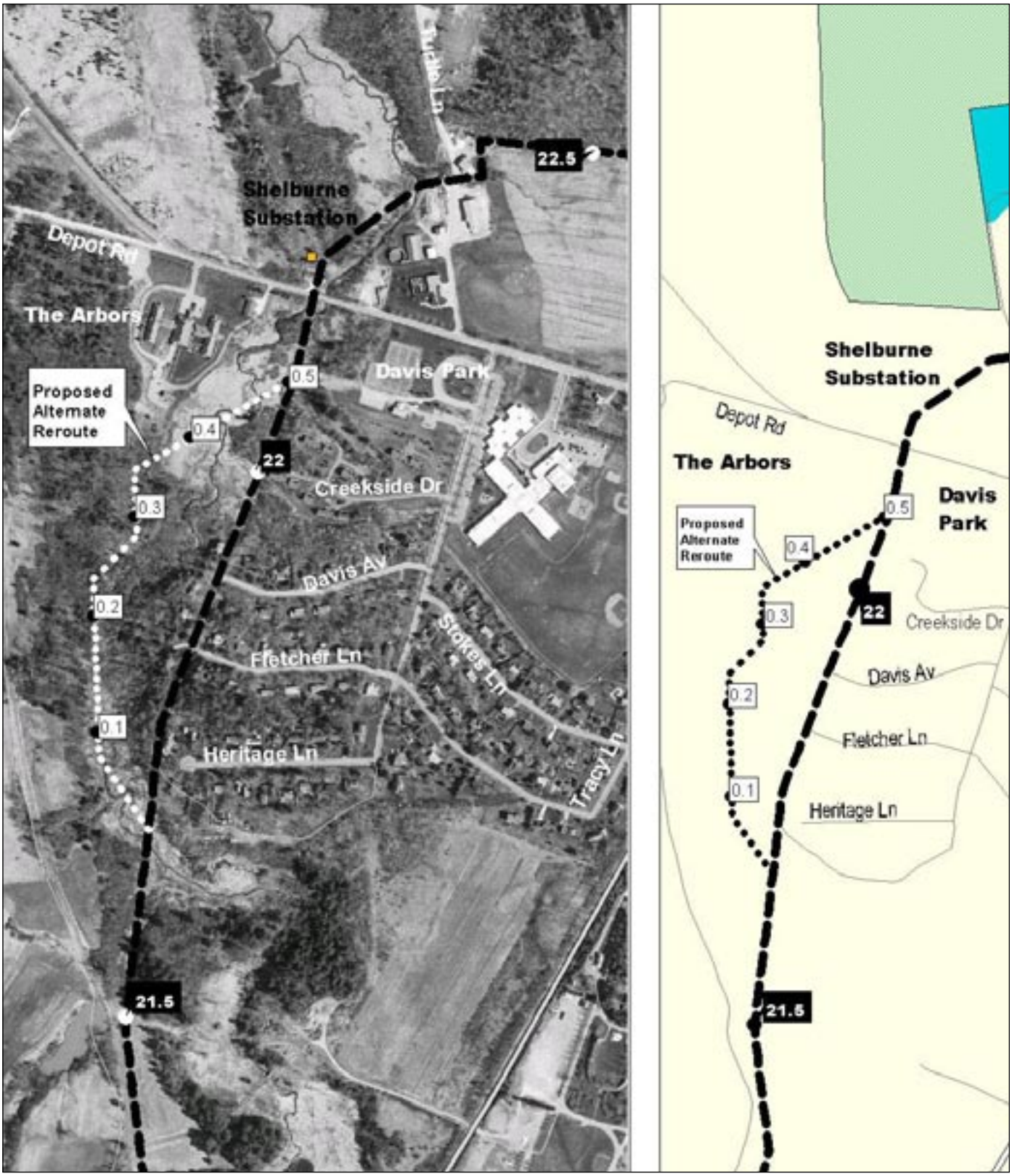
View of proposed corridor path for VELCO alternative reroute.

Mile 0.5

Approximate site of the proposed Charlotte substation. This is an improvement over the current location because of it removes the substation from the immediate view of the public and places it in a much less visible location that can be screened.

Mile 0.5

Approximate site of the proposed Charlotte substation, taken from the old Champlain Flyer train station. Existing 34.5kV line in view.



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Mile 21.8
Original
Route

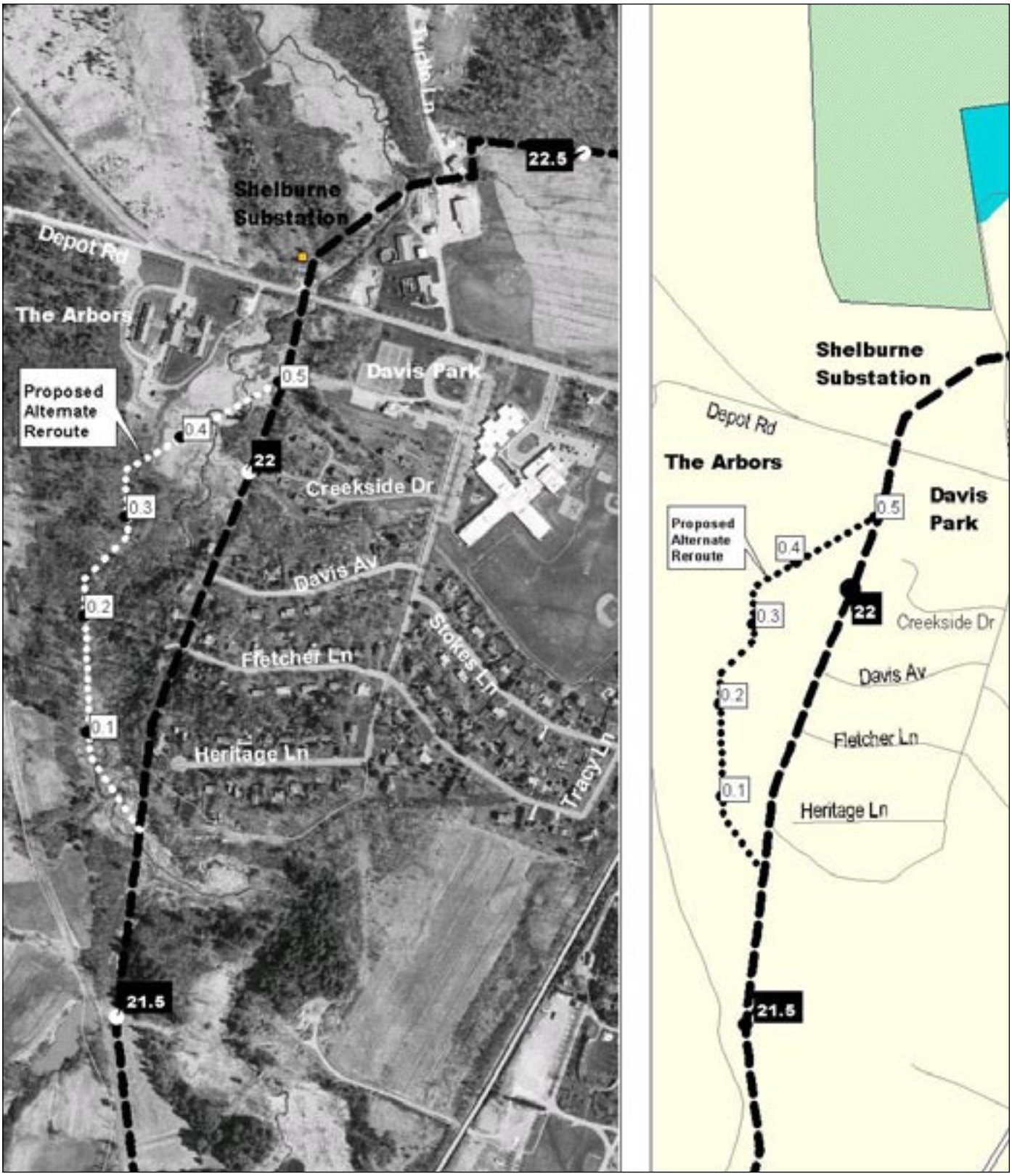
View of existing 34.5kV line near Fletcher Lane.

Mile 0.1

Proposed location of Shelburne reroute in distance beyond foreground evergreens. Photo taken at end of Heritage Lane.

Mile 0.1

Proposed location of Shelburne reroute in distance. Photo taken at end of Heritage Lane. With minimal clearing it should be out of the viewshed of the neighborhood.



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Mile 0.4

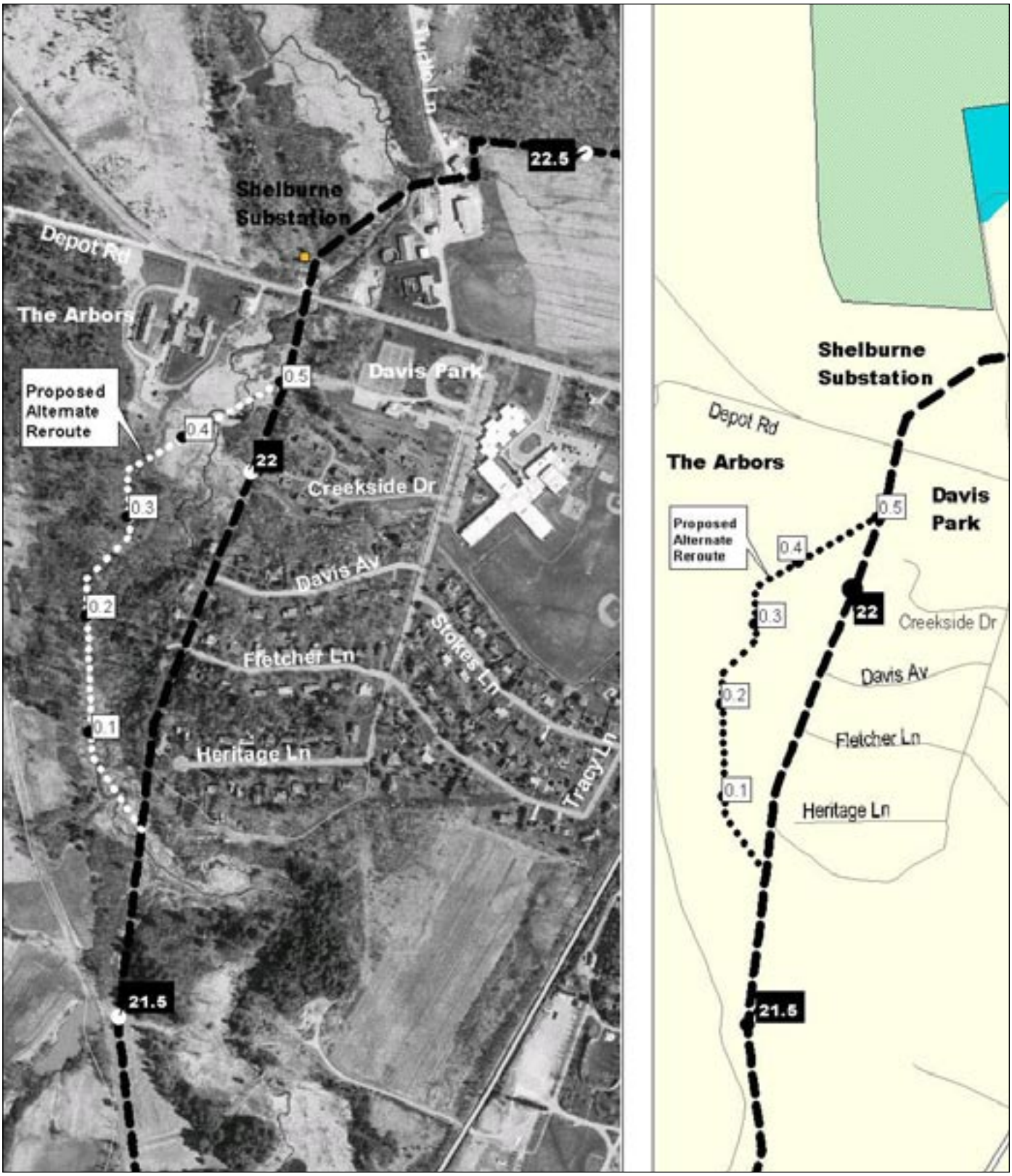
View of the existing line behind the Harbor View condominiums on Creekside Drive. The proposed line will run further away from this vantage point. The existing line will be removed.

Mile 22.0 Original Route

View of the existing line behind the Harbor View condominiums. The proposed line will run further away from this vantage point. The existing line will be removed.

Mile 22.0 Original Route

View of the existing towers through the vegetated area. The proposed line meets the existing in approximately this area. This is not a highly visible or public accessed area, and therefore visual impacts will not affect a large number of people.



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Mile 22.0 Original Route

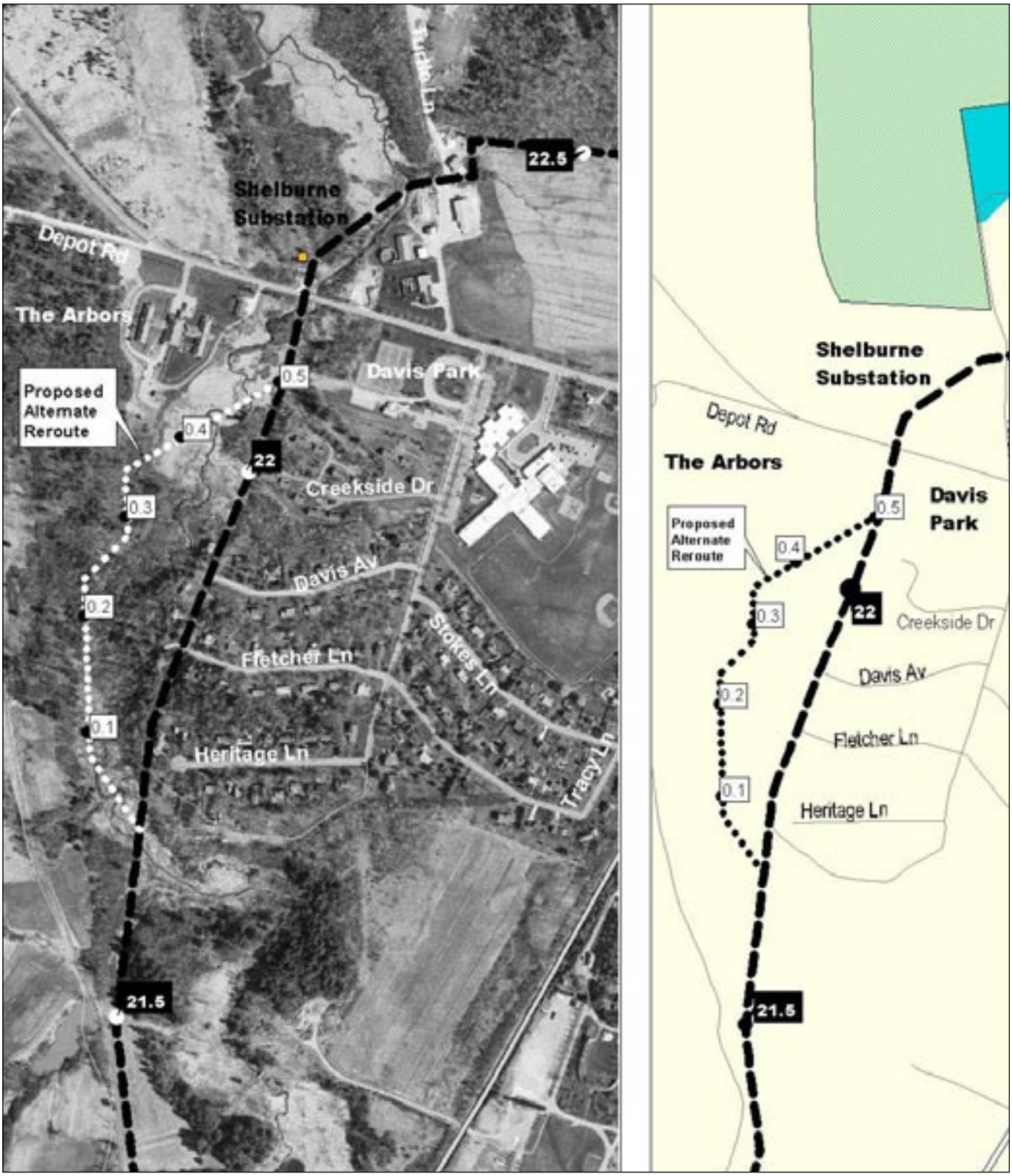
View of the existing towers through the vegetated area from the end of Creekside Drive. The proposed reroute alternative line meets the original route in approximately this area.

Mile 0.4

View from the Arbors development across the meadow. Screening will be desirable to reduce the visual impact here.

Mile 0.4

View from the Arbors development across the meadow. Screening will be desirable to reduce the visual impact here.



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Mile 22.2 Original Route

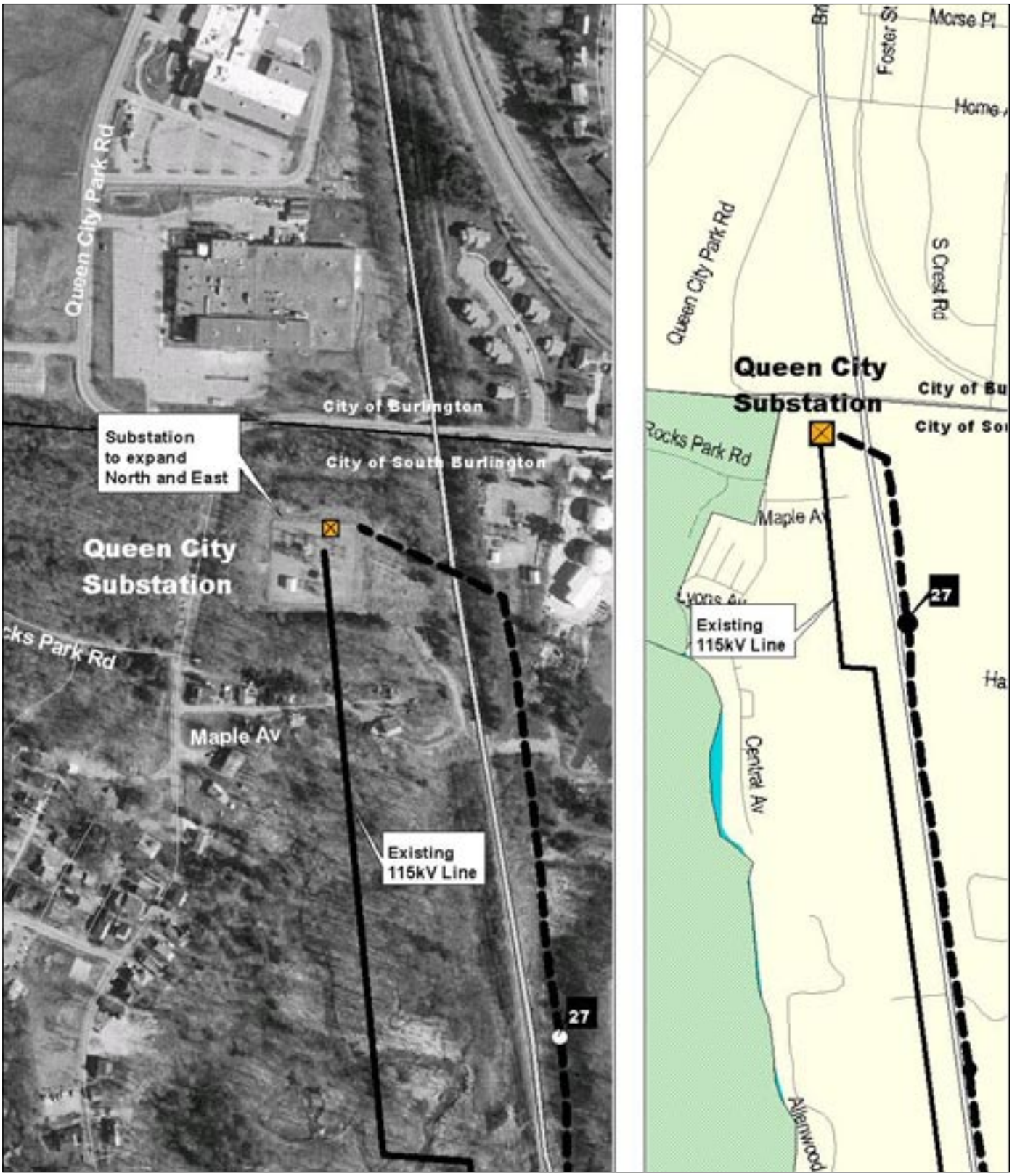
The Shelburne substation borders the recreation path. The Substation will expand back alongside this path.

Mile 22.2 Original Route

View of the existing substation from Harbor Road. Substation expansion proposes 5 parking spaces in front of the substation, and this raises concerns in so far as it limits screening of the facility. With vines or enclosures and a side entrance as mitigation measures, the Quechee test will be satisfied.

Mile 22.2 Original Route

These trees are in the way of the proposed substation expansion. Trees of sufficient size should be planted in their place.



Original proposed 115kV line shown as dark dashed line. Numbers on Map correspond to Mile Markers for the Proposed Original Route and Alternative Re-route. Mile Markers correspond to numbered photographs on opposite page; photographs on opposite page correspond to Mile Markers for Reroute Alternatives only unless noted as mile marker for "Original Route." Shaded areas represent Conserved Public & Private Lands.
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Mile 27.1
Original
Route

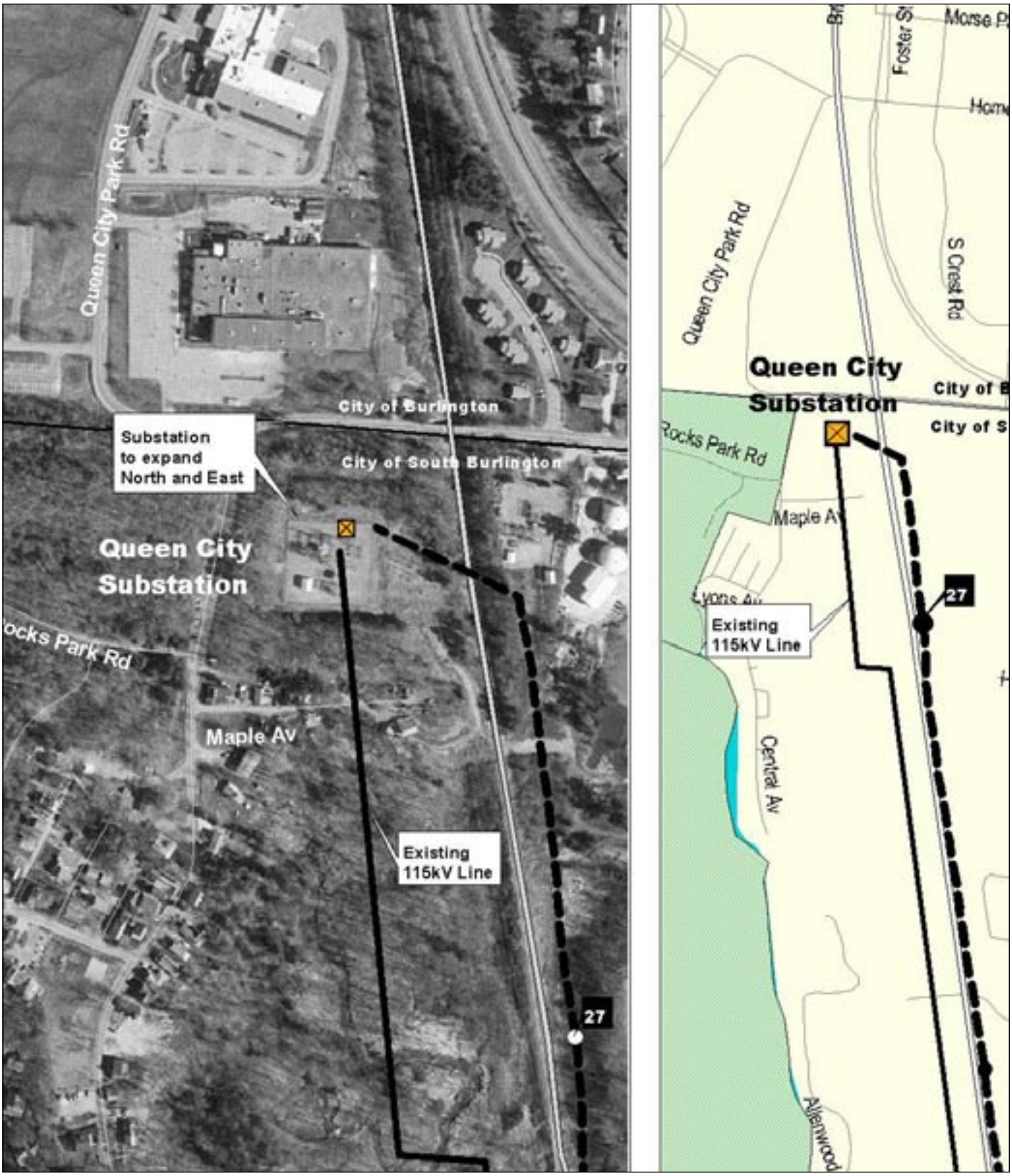
View of the southeast corner of the existing Queen City Substation structure. The proposed expansion will enlarge the substation to the east (right side of photograph) and north (background of photograph).

Mile 27.1
Original
Route

View of the eastern side of the Queen City Substation structure. The substation will expand into the right side of this photograph.

Mile 27.1
Original
Route

View looking east, showing the northern edge of the substation and the areas which will be cleared due to expansion. Additional screening has been proposed by Terry Boyle to mitigate the effect of this clearing on views from the Queen City Park road.



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Mile 27.1
Original
Route

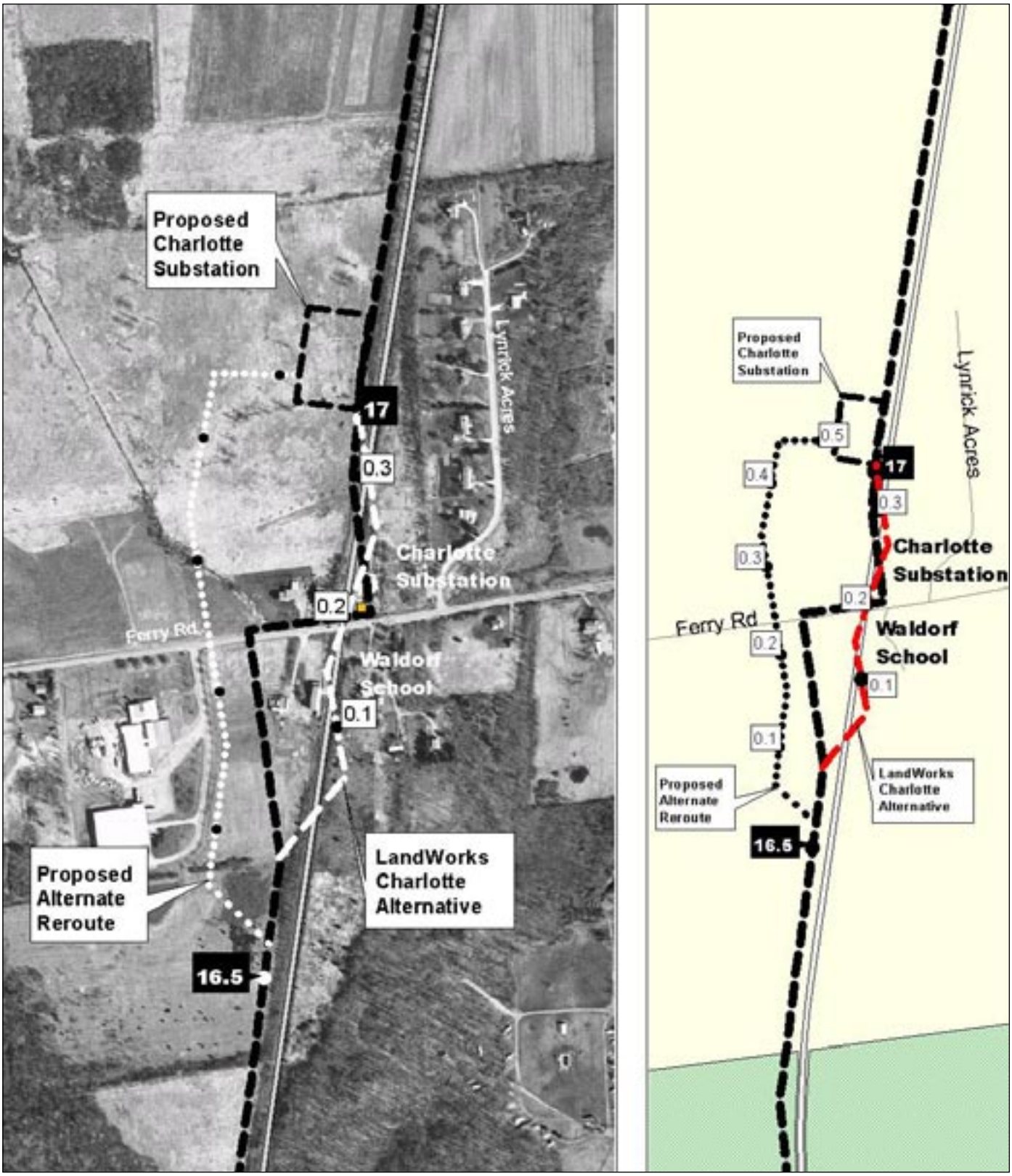
View of looking west of the southern side of the substation, along with the existing evergreen screening which provides a partial visual buffer between the facility and nearby residences (see photograph below).

Mile 27.1
Original
Route

Photograph taken from the Queen City Substation of nearby residence visible through existing screening. This photograph demonstrates how pines eventually become less effective for screening as they mature and lose their lower branches.

Mile 27.1
Original
Route

View taken from Central Ave. of the substation which is barely visible through the existing screening.



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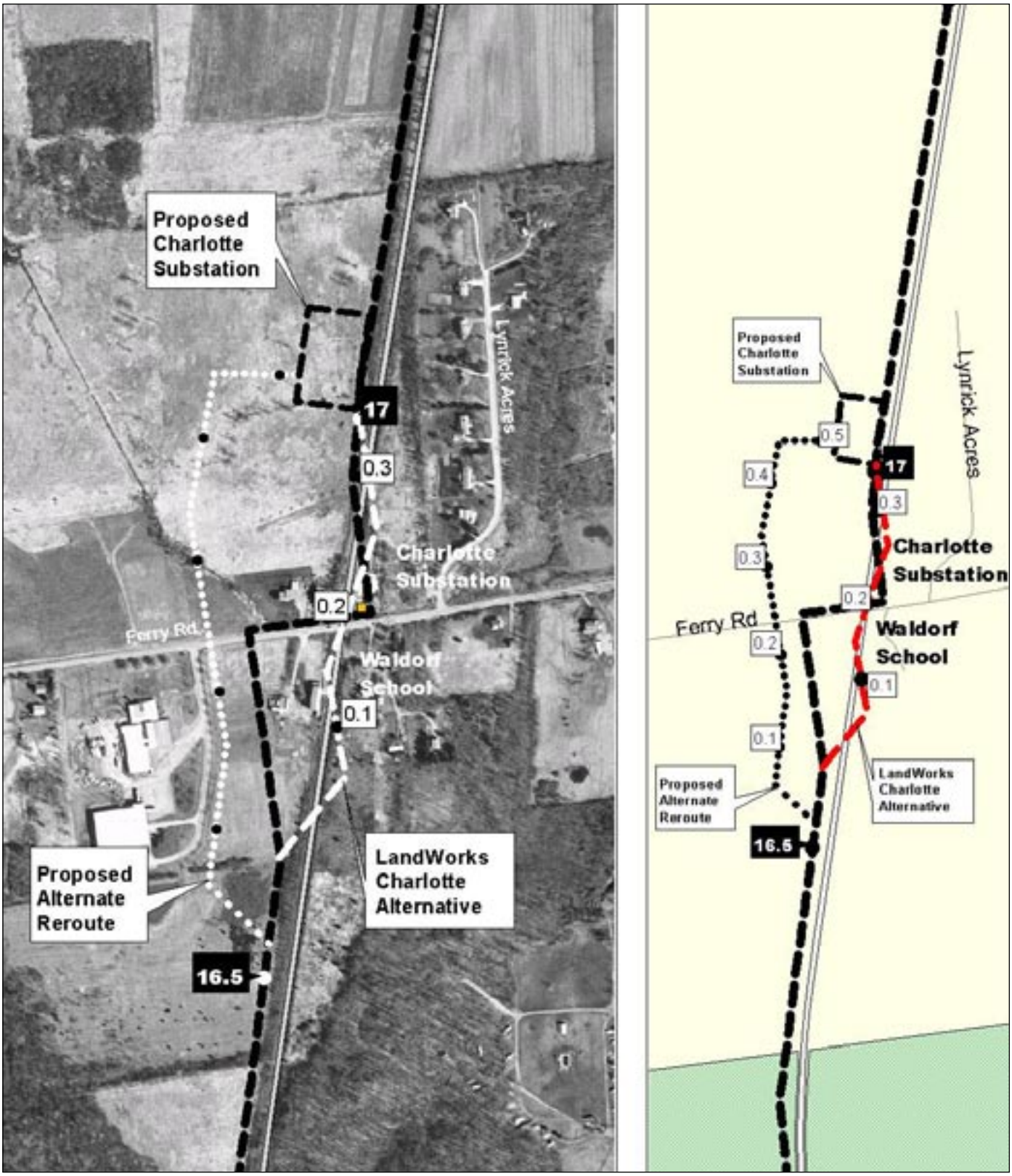
LandWorks' Charlotte Alternative Route

The following section provides analysis on the recommended Charlotte Alternative Reroute proposed by LandWorks. The map on the preceding page details the LandWorks' Charlotte Alternative Route. The LandWorks' Alternative Route crosses the tracks three times as it heads north in advance of the Ferry Road crossing. The design of this alternative route will require tall steel structures which will utilize the railroad corridor to the maximum extent and will minimize the impacts on the adjacent properties, namely the Waldorf School and the existing residences located along the east side of the railroad corridor. There will be one pole to the north of the existing Waldorf school building, between the parking lot and the railroad tracks.



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Mile 0.1
LandWorks
Alternative
Route

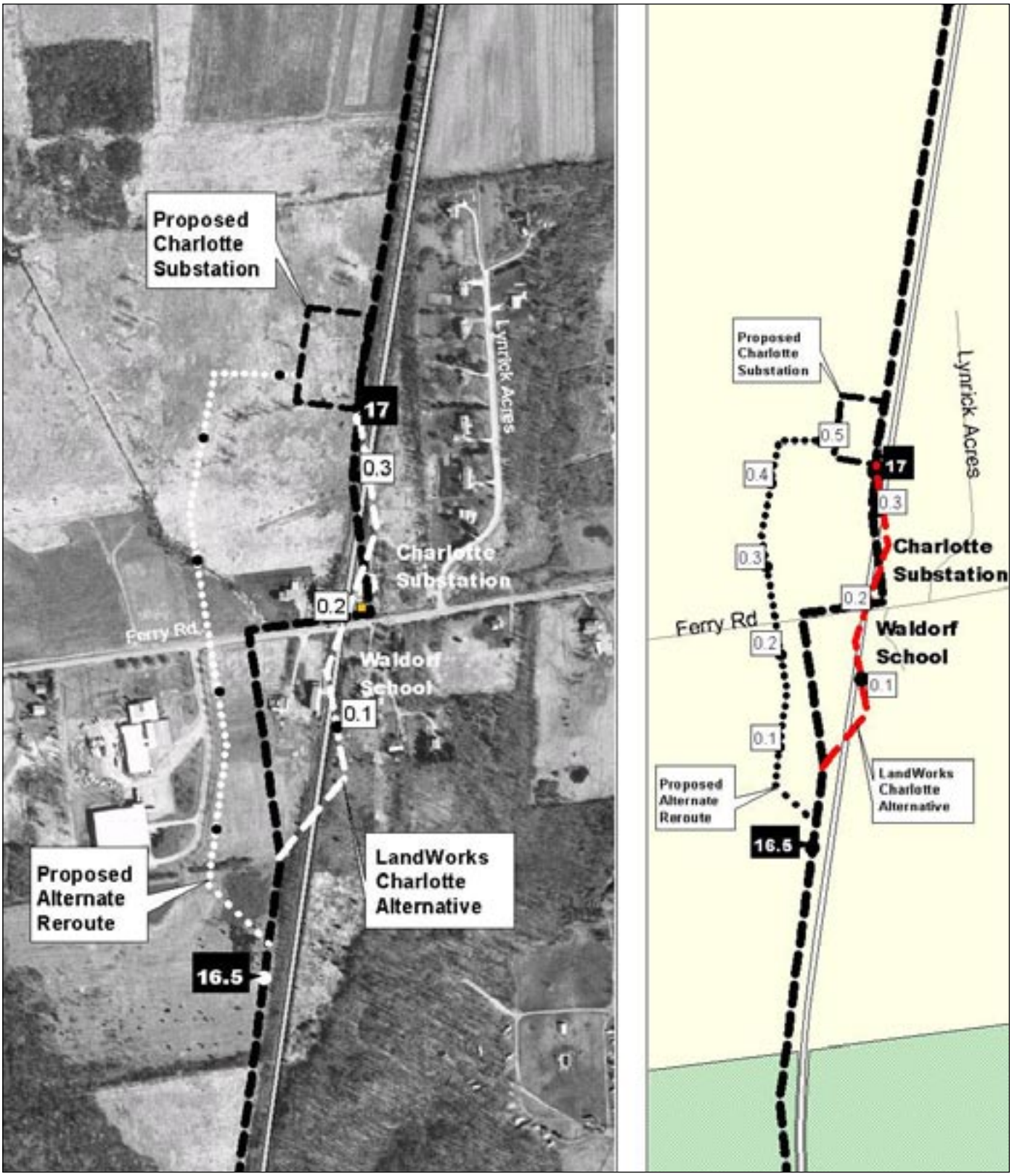
View to the south of the location of the LandWorks' Alternative Route at the Ferry Road crossing. This alternative routing will cross the tracks three times. This alternative will provide least impact on the buildings in surrounding area.

Mile 0.1
LandWorks
Alternative
Route

View of vegetated area on the opposite side of the tracks from the Waldorf School.

Mile 0.2
LandWorks
Alternative
Route

View of a driveway to adjacent home. The Waldorf school pictured in the background is located on the other side of the railroad tracks from where this photograph was taken.



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Mile 0.2
LandWorks
Alternative
Route

Looking West down Ferry Road at the railroad corridor crossing. Moving the poles away from this area creates a new intrusion into the landscape as well as affecting the proposed residential development in the West Village.

Mile 0.2
LandWorks
Alternative
Route

View of the railroad corridor heading south. The Waldorf school is on the right.

Mile 0.3
LandWorks
Alternative
Route

View looking north towards train station. The LandWorks' Alternative will rejoin existing 34.5kV line in this area.

Lighting

As part of its initial filing VELCO presented plans and preliminary specifications for lighting substations included in the NRP. Site lighting is evaluated because it has the potential for resulting in adverse impacts to aesthetics via conditions created, for example, by light trespass, glare and impact to the context and character of the neighborhood. Substation lighting is relevant both to the Re-route filing and to the initial filing.

Proposed Lighting Approach

The proposed light for the substation buildings is shown as a WML Wallighter luminaire. The cut sheet indicates that it can be operated by a photocell. This light has no shielding whatsoever so the light source will be visible and glare and light trespass could result. An alternative light should be considered by VELCO, should be better shielded and have a cut off pattern so as to light only those areas in need of light.

The proposed floodlights are shown mounted on the substation perimeter fences. Most installations involve a minimum of 12 such floodlights. A typical photometric plan for these lights provided by VELCO demonstrates lighting levels and light spread which, although controlled on the ground via reflectors or some other type of illumination shielding, may have the potential for off-site visibility due to the placement height and luminaire positioning of the lights. This floodlight has minimal shielding so the light source will be visible and glare and light trespass could result. An alternative light which is shielded and has a cut off pattern so as to light only those areas in need of light is something VELCO should consider to address this potential for impact. For example, at the proposed Granite Substation some of the lights are facing in the direction of the residential neighborhood. The information provided and the response thus far from VELCO have been insufficient. VELCO has not provided photometric plans for many of the proposed substation expansion proposals and has indicated that it will explore alternative, shielded luminaires but has not proposed any. VELCO's responses to questions in discovery indicate that VELCO has not fully assessed whether or not these lights will be visible to off site neighbors or viewers. Thus VELCO should:

1) Confirm that they can use a shielded luminaire that will have no off site impacts

2) Provide photometric plans for the most sensitive substation locations to assess light levels both on the ground and off site to the eyes of the potential viewer and

3) Demonstrate that there will be sufficient screening to control off site lighting impacts, if necessary.

Conclusions Regarding Adverse Impact

Proposed new substations such as those being planned for Vergennes, and Charlotte, as well substantial increases to the structure and footprints of those in Granite, Shelburne, New Haven, in particular, will also include a substantial number of new lighting fixtures. Location and screening can and will effect the potential for impacts. Based on the increase in lighting and the potential for a consequent increase in ambient light in the environment. This is of particular concern with regard to those substations located in the vicinity of residential areas such as Charlotte (in the proposed reroute option), Ferrisburgh and Queen City. The Shelburne and New Haven substation expansions are in locations where increased lighting will be potentially visible in the immediate environs and sky. A review of the typical lighting placements and lighting types confirms this. We must conclude that the lighting as proposed will result in an adverse impact.

As stated, at the proposed Granite Substation some of the lights are facing in the direction of the rural residential neighborhood. No street lighting was observed in this area. There exists the distinct potential for an undue adverse impact to this residential area from increase night time glow and the visibility of the lamps themselves to the naked eye. Off site light trespass or glare potential may result and this will sufficiently change the nature of the ambient evening light so as to be offensive to a reasonable person experiencing the before and after conditions. This potential may also exist, in particular, with the proposed new substation location in the Charlotte reroute as well as the Queen City substation.

Where lighting impacts are potentially undue, adverse, VELCO needs to compare proposed flood-light lighting levels with lighting levels of existing lights. They also need to compare proposed lighting levels with recommended security lighting levels and cumulative lighting impacts. If taken collectively, the light trespass can be reduced so as not to impact adjacent residences or drivers and pedestrians, then an undue determinant can be avoided.

Additionally, there are potential mitigation measures which are reasonable and available which the applicant may incorporate.

Mitigation Recommendations.

The following mitigation recommendations, any of which, if implemented, will satisfy the Quechee criteria so as not to result in an undue, adverse determination with regard to aesthetics:

1. VELCO should install sufficient screening coupled with non-reflective ground surface material that will minimize light trespass and night sky glow to an acceptable level in the adjacent neighborhood.

2. VELCO should employ reduced lighting levels (wattage), and aggressive cutoff technology, as well as light source shielding to ensure that the methods employed will minimize light trespass and night sky glow to an acceptable level in the adjacent neighborhood.

VELCO has indicated a willingness to explore different pole heights for different locations along the NRP route. Different pole heights can be effective mitigation measures. For example, lower pole heights may allow the line to be effectively "backgrounded" against a treeline rather than being visible above it. Until we know specifically where particular pole heights are being employed, and for what purpose, we cannot determine the efficacy of using one pole height or type over another along the route.